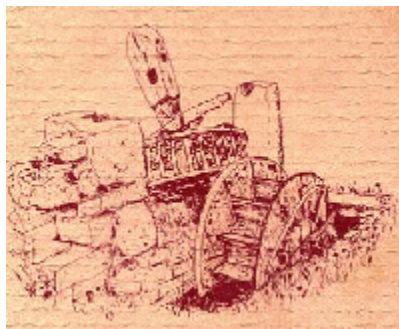


ISLAMIC AND CHRISTIAN SPAIN IN THE EARLY MIDDLE AGES

*Comparative Perspectives on
Social and Cultural Formation*

Thomas F. Glick



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INTRODUCTION

1. Traveling the Cultural Frontier

HISTORY seems scarcely distinguishable from myth. Historians, whether critical or not, at one point or another in their work, embody in the past values which seem to them to be the most significant or enduring of a given peoples' experience. Since values are culturally or socially defined, historians, from this perspective, engage in a process of myth-building. This is a proper role for historians, although not the only role, and I do not mean to disparage the part played by myth in all cultures, particularly as a context which makes the past something worth preserving and something intelligible to the present.

Yet certain national schools of historiography -- the Spanish is the case in point -- seem less able than others to disentangle present myths from past ones or to deal effectively and realistically with those aspects of the past which have been particularly productive of conflict or anxiety. I believe that the historian's role as interpreter of culture is analogous to that of the psychologist as interpreter of the individual psyche. In the middle ages conflict with the Muslims provided a very realistic basis for the fear of Spanish Christians, which became internalized both in individual psychologies and in collective norms regulating social distance among religious groups, and which finally were institutionalized in discriminatory laws and apparatus for enforcing them. To explain such phenomena as the Inquisition in terms of generalities like "intolerance" or "religious exclusivity," let alone such constructs as "nationalism," "capitalism," or the rise of the "modern" state, does not do justice to the social-psychological dimensions of the problem. For, long after the enemy was vanquished, the Jews expelled, and the Inquisition disbanded, the image of the "Moor" remained as the quintessential stranger, an object to be feared. Case histories in recent Spanish clinical psychology bear out this contention.⁽¹⁾

Transposed into the historiographical field, subconscious fears became transferred into bias that underlies historical interpretation and contributes to misinterpretation. Unless purged of such bias, the historian cannot play a valid role either as interpreter of the past or as a creator of myth [4] for the present and future, no more than (and to the same extent as) a neurotic individual can interpret the strands of his own past conflicts that have brought him to his present state, or fashion functional guidelines for future adjustment.

Although, like most historians trained in the positivist tradition, I strive to be objective, I nevertheless know that my own values play a formative role in the picture that I present of medieval Spanish history. I believe that ethnocentrism is the bane of peoples and of history; that contact of cultures is inevitably creative, however conflictive; and that the mettle of a culture is manifested in its ability to adjust to other cultures without destroying them..

For all of my scholarly career I have traveled the interface between two cultures, Islamic and Spanish, able to identify strongly with both, but still feeling not quite at home with either. I was trained as an Islamist; my research has largely fallen on the Spanish side. For

these reasons, possibly, my notion about what is distinctive or even normative about medieval society may differ considerably from those of either the Islamist or the Hispanist. Only by identifying with both cultures, and with one no more than the other, can the historian entertain any reasonable hopes of filtering out some of the more flagrant biases that have so persistently plagued this area of investigation.

This book is not intended as a general survey of the high middle ages in Spain, but rather as an analysis of central issues and phenomena that contributed to the formation of Islamic and Spanish cultures in the Iberian peninsula and that guided the interaction among both peoples.⁽²⁾

Underlying the narrative which follows is a concern for the processes whereby distinctive cultures and societies are formed. The two cultures here described had vastly different histories but were nonetheless caught up in a situation where old cultural and social patterns had been broken and new ones were forming. The Muslims, who quickly established themselves, through conquest, as the dominant group, represented a new religious and social order which had not yet, in the eighth century, elaborated firm norms. That solid body of religious law which characterized mature Islamic society had not yet evolved, and the conquest created a body of culturally heterogeneous believers. The Christians had suffered the total destruction, by conquest, of their society and institutions and had to restructure them completely. Given the balance of power favoring the Muslims, the emergence of new patterns of social organization and cultural expression in Christian Spain had to reflect adaptation to the Muslim presence. [5] The processes of social and cultural formation are analogous ones and are referred to in this book as crystallization (social, in Chapter 6, sections 1 and 2; cultural, in Chapter 9, section 2). While the patterns of crystallization, both social and cultural, conform to general frameworks devised by sociologists and anthropologists, the case of medieval Iberia is doubly interesting because of the constant interchange between the two societies during the period of crystallization. Culture contact is a normal ingredient in the formation of cultures, but the length and variability of contact in medieval Spain lend the case unusual complexity.

2. Comparison and Diffusion

The comparative approach adopted in this book is in part a reaction to the general contrastive bias of medieval Spanish history, to view the two opposing blocs as radically dissimilar in religion, if not always in culture, and as therefore leading to assumptions of difference, rather than similarity, when in doubt. The adoption of this approach, an experiment at best, was suggested by a geographical intuition: the settlement of a unified geographical area by peoples of different cultures. From this perspective, the method works optimally in investigating the organization of formerly Muslim-held lands after they were conquered by Christians, an epoch beginning only in the late eleventh century. Nevertheless, in comparative perspective, there is some truth in the traditionally held view of the history of Christian Spain from the eighth century on as a preparation for the occupation of the entire peninsula which, when disengaged from the teleological overlay usually given it, further suggests the relevance of a comparative approach.

Because this book is cast in a civilizational perspective, the contact of cultures and the diffusion of discrete elements among them must play a major part in my narrative. But since the flow of elements from one culture to another and the processes by which such elements may have been adopted or rejected are to a great extent dependent on the structures of the societies involved, the comparative study of the two groups -- Muslim and Christian -- perforce presupposes making judgments of comparative or contrastive nature. Behind the constant recurrence of cultural diffusion as a theme of medieval Spanish history is more than a prurient interest in tracking the impact of Islamic upon Christian culture. There is the recognition that in the communication between two societies of unequal levels of socioeconomic integration, the difference in structure of the two [6] societies sets in motion processes that are systemic in nature and exceed in impact the sum of the individual elements (techniques, ideas, institutions) transferred.

From the middle of the ninth century to the end of the period covered in this book (around 1300), the contact was between peoples not only of different cultures, but of different socioeconomic systems. One bloc, the Islamic, dominant until the eleventh century, was an expanding, "urban-artisanal" society, fully implanted in a larger economic network (the Mediterranean, in the first place, and beyond that the Islamic world as a whole). The other bloc, the Christian, was for most of the same period a heavily ruralized region which for the present we can characterize as "static-agrarian."⁽³⁾

In each, therefore, all major social features were organized according to very different processes. In Islamic Spain, embedded in an international monetary economy, the cities were able to attract, mobilize, and direct agricultural production and thus to divert natural resources into burgeoning urban-craft industries which in turn required specific instruments of control.⁽⁴⁾ In Christian Spain (except for Barcelona, and this rather late in our period) the nature of state and society were shaped by the more rigid structure of the agrarian economy whose surpluses tended to flow, not to the cities, but to rural centers, organized by lay or ecclesiastic lords.

It follows from this dichotomy that the diffusion of any cultural element, whether technological, economic, or institutional, involves its adaptation to a sharply different socio-economic context and may therefore cause ripples throughout the entire system. Here again, comparative analysis is called for; because if cultural diffusion between two societies of unequal socio-economic organization leads to structural changes in the recipient culture, the structures of both must be understood in order to gauge the impact of diffusion. Thus we shall argue, for example, that contact between al-Andalus and Christian Spain, particularly Castile and Aragón, had the effect of inducing, stimulating, and determining specific forms of urbanization, which cannot be explained adequately without reference to the structure of the urbanized Islamic society.

3. Culture Contact and the Polemic of Spanish Historiography

Spaniards have, of course, been aware since the middle ages that many traits of their culture were acquired from the Muslims. They knew this [7] because of the formalized continuity of certain customary arrangements, exemplified in repeated legal strictures that these were to continue "as was the custom in the time of the Moors." A large number of words in the peninsular Romance tongues were easily recognized as Arabisms, and popular diffusionist notions attributed a "Moorish" origin to a wide variety of objects that looked ancient or different.⁽⁵⁾

In the past century, the English Hispanist Richard Ford was the first to compare the two cultures systematically, and although the literary genre in which he articulated most of his findings -- a tourists' guidebook -- tended to discourage scholars from taking his work seriously, he was nevertheless correctly able to identify as of Islamic provenance a vast range of customs and techniques that he personally observed in Spain during the 1830's.⁽⁶⁾ At the turn of the century, the Spanish Arabist Julián Ribera made a significant advance: he argued cohesively, on the basis of theoretical suppositions regarding the nature of cultural diffusion, and by using comparative methodology, that generalized systematic borrowing by Christians of discrete elements of Islamic culture had taken place. To account for similarities between the medieval Aragonese justiciar, or appeals judge, and the Islamic *mazálim*, Ribera developed a theory of imitation, whereby two contacting cultures exchange elements, according to the kinds of communication that take place between them, the presence or absence of geographical or cultural barriers to such communication, and social and psychological factors influencing the receiving culture's receptivity to innovation.⁽⁷⁾ Ribera was the first, and the last, to attempt a behaviorist, social science approach to the problem of cultural borrowing in medieval Spain.

The present polemic began in 1948 with the publication by Américo Castro, a philologist and literary historian, of a book entitled *España en su historia*, since revised numerous times.⁽⁸⁾ His thesis, as it is generally argued, is that the culture we know as Spanish did not exist before, and came into being as a result of, the interaction of Muslims, Christians, and Jews (the "three castes," he calls them) in the eighth through the thirteenth centuries, and that the resultant culture bore the mark of that interactive process. He was answered in 1956 by Claudio Sánchez-Albornoz, dean of Spanish medieval historians, in a massive refutation entitled *España: Un enigma histórico*.⁽⁹⁾ Sánchez-Albornoz replied that Castro had exaggerated both the extent and nature of the contact between Muslims and Christians, which was conflictive and therefore not conducive to creative [8] cultural interchange, and that most of the components of "Spanish" culture are either idiosyncratic or consist of Roman, Gothic, or elements of other than Semitic provenance.

I cannot here give an extended critique of these two positions, but will simply outline the main issues as I perceive them, discuss briefly how each of these two scholars has resolved the issue, and then point out the limitations of the debate and the effects it has had on recent historiography. At issue are three related problems:

(1) *The nature of cultural substrates.* To what extent do enough cultural elements persist over very long periods of time so that one can point to a recognizably "Spanish" or Hispanic

culture extending from Iberian times, through the Roman, Visigothic, and medieval periods into modernity?

(2) *The process of cultural change.* What phenomena stimulate cultural change and govern its rate and direction and, in connection with the previous point, to what extent do prior cultural substrates place limits on the extent of such change?

(3) *The impact of cultural contact.* Given that contact produces changes in one or both of the contacting societies, what areas of culture are affected and what are the processes governing the selection of those areas?

It is interesting to observe that both Castro and Sánchez-Albornoz resolve these problems within the context of models of cultural evolution prevalent in Spanish intellectual circles during the period of their intellectual formation. Castro, heavily influenced by German philosophers of history, took a Hegelian position on social evolution, according to which literacy was a crucial stage in the advancement of the species. Thus Castro believed, in a direct echo of Spengler, that primitive (that is, non-literate) peoples had no history, and -- the opposite side of the coin -- that the decisive processes of cultural change took place on the level of "literary" creation (which he understood broadly as comprising all of high culture). Thus for Castro "before becoming perceptible and ascendant as a fit subject for history, the Spaniard did not exist."⁽¹⁰⁾

In Sánchez-Albornoz's reasoning, the biological model is explicit, but decidedly anti-evolutionary. He cites Ortega y Gasset on the indemonstrability of the transformation of species (e.g., a tiger is always a tiger) and accepts the monophyletic origin of human races. Modal personality is determined by *herencia temperamental*, a constellation of characteristics, genetically transmitted, which remain quite constant over the long run, [9] changing only very slowly, if at all. When he admits change, it is phenotypic, not genotypic: "Temperamental inheritance is an operative potential which offers possibilities and sets limits to the action of human communities and individuals, but within the cultural and existential environment in which their history and life transpire; a climate which has never remained static, which continually changes."⁽¹¹⁾ Social and cultural environments may change, eliciting different expressions from the peoples in question who, however, always retain the same "temperamental inheritance." Thus Hispano-Romans, Goths, "Hispano-Muslims," and Castellans, while having distinctive characteristics, were all, nonetheless, Hispanic in their temperamental inheritance. All of this is very much in line with moderate Catholic evolutionism of the late nineteenth century, which admitted change up to, but not beyond, the species level.⁽¹²⁾

Thus Castro is able to admit a far greater potentiality for cultural change than is Sánchez-Albornoz in the three areas outlined above, which each resolves as follows:

(1) Castro is insistent that cultures, with language the primary parameter, change radically over time, creating diachronic boundaries between one another. Therefore German-speaking Visigoths of the eighth century and Castilian speakers of the eleventh cannot both be called "Spanish." For Sánchez-Albornoz, the temperamental inheritance was a

permanent substrate that controlled the limits of cultural differentiation; he once boasted that he had "been able to follow the curve of Hispanicity from Seneca to Unamuno."⁽¹³⁾

(2) For Castro, the interchange between one culture, predominantly Arabic-speaking and Islamic (together with a differentiated Jewish element) and another, Romance-speaking and Christian throughout centuries of intimate contact (which he calls *convivencia* -- literally, "living together") induced changes in Christian culture which clearly differentiated it over time from its Hispano-Roman and Gothic progenitors. These changes were both reactive and imitative in nature. For Sánchez-Albornoz the substratum, however defined, is taken as representing the core of the modal personality, the equivalent of a genotype. One species cannot become another, no matter how many "mimetic trappings" it may take on. Whenever he admits some cultural change, he is then able to deny its significance by alluding to a concept of latency: the Spanish temperamental inheritance may be submerged, but, provide it with a propitious environment, and it will emerge again.⁽¹⁴⁾

[10]

(3) Although Castro cites a stock list of Arabisms in many fields, particularly economic (agriculture, urban crafts), such pursuits do not play a large part in his explanation. He is primarily interested in the processes of cultural differentiation and self-ascription whereby Spaniards began consciously to perceive their ethnic distinctiveness (as Christians, first and foremost, in contradistinction to Muslims). Therefore, Castro is at his best when tracing literary, philosophical, or religious themes. In the latter category, he points out that Christians institutionalized Islamic notions of militant religion, but otherwise he is not interested in institutional history. The doings of common folk, unless reflected (that is, made conscious or perceptible) in literature or art are not "historifiable," not proper objects of historical inquiry. Sánchez-Albornoz, an institutional historian, is naturally more concerned with institutional interchange, which he believes to have been minimal; such Islamic elements as appear are, at best, "mimetic trappings." In his polemical writings he seems generally to accept Castro's definition of what aspects of culture were most "historifiable": religious values, honor, and so forth. Cultural elements not encompassed in the scope of the dominant value-system, or the broad social and economic processes underlying them, are *mundanidades* and of no interest to the historian.⁽¹⁵⁾

Sánchez-Albornoz's view of the whole process is conditioned by his perception of Islamic culture in Spain. In his view, no Eastern Islamic elements could have reached the Christian kingdoms (at least before the conquests of the late eleventh century resulted in the ingestion of a large Muslim minority) because the culture of al-Andalus was idiosyncratic, within the bounds of the temperamental inheritance of the Neo-Muslims, the converted Hispano-Romans who formed the majority of the population.⁽¹⁶⁾ Such a view of Islamic culture in al-Andalus is simply and clearly wrong.

It is unfortunate that the focus of the polemic has not been the definition of mechanisms and processes governing culture contact and cultural diffusion but, rather, the issue of modal personality ("national character"). Since both Castro and Sánchez-Albornoz were political liberals, exiled after the trauma of the Spanish Civil War, they were obsessed with explaining what had made modern Spaniards the way they are; both professed to have

found the answer in the Christian-Muslim confrontation of the middle ages. It is unfortunate that the debate centers here because it invites all kinds of unsubstantiated and unprovable generalizations. (I [11] believe that modal personalities exist and can be described meaningfully, but only if the characteristics that constitute them can be directly related to social structure. Thus aggressivity or honor may well have characterized Numantines, Visigoths, and medieval Castilians alike, but any connections between them would have to be proved at the level of family structure, the socialization of children, and the like.) It is at this point where history and myth become hopelessly entangled.

Castro perceives in modern Spaniards a feeling of insecurity, and, in regard to the rest of Europe, inferiority, and associates these with the ambivalent, semi-dependent relationship their ancestors had with Muslims and Jews. Many members of Castro's generation subscribed to this characterization of Spanish modal personality (insecure, inferior) and because they did they were prepared to confirm their suspicions arising from recent social traumas with mythic associations with the medieval past. That is why Castro's impact on his own generation of Spanish intellectuals was enormous and Julián Ribera's, whose views on the dynamics of cultural interchange were more coherently and systematically defined than Castro's, was minimal.

I will summarize the balance of the arguments as they relate to this book: substrates are important to philologists but not so much to historians, who understand that historical processes always involve a mixture of change and continuity. Castro points out, with reason, that Visigothic elements in Spanish culture of the tenth through the twelfth centuries are *survivals*, while the Arabic elements were contemporaneous and *living*.⁽¹⁷⁾ I do not accept this proposition quite as stated, but would restate it to the effect that elements can be diffused across diachronic, as well as geographical, frontiers and that their mere presence says nothing of their function. The various prelates and statesmen who throughout the middle ages adopted Visigothic anti-semitic strictures, formulated in the Toletan councils of the seventh century, were not acting within the scope of, or in continuity with, Visigothic culture.

As for the processes of acculturation and culture change, the examination of these are foreclosed structurally from Sánchez-Albornoz's point of view. Castro's conclusions are generally acceptable, as far as they go; but he gives the impression that the cultural processes, lumped together under an umbrella-term, *convivencia*, took place in a social vacuum and were quite independent of social forces. He says as much: Christians achieved total power and were able to do away with Jews and Muslims because the [12] former aspired "to be more, and the Jews and the Moors ... were a serious obstacle in the way of that goal."⁽¹⁸⁾ In Castro's vision, relationships among persons of the three castes were structured on a basis of parity, as if these groups were of equal demographic weight, political and military force, cultural potency, and in complete disregard of the institutional or legal mechanisms controlling access to power. What counts for Castro is not the material strength of each group, but the relative, conscious will of each to succeed.

In the present book, we shall maintain that cultural interactions among the three groups were very sharply structured, in the period extending approximately from 750 to 1085, when there was a stabilized Islamic-Christian frontier, by the relative disequality in the

socio-economic structure of the two sides; and, after that period, when the Christian kingdoms acquired substantial Muslim and Jewish enclaves, by a variety of social conventions, legal norms, and governmental institutions that, in great part, determined the nature of cultural interchanges.

Sánchez-Albornoz, in fact, was quick to point out that the symbiosis which Castro stressed seemed a misrepresentation of social reality and underplayed to the point of serious distortion the conflictive nature of the centuries Of Muslim-Christian contact, which would be better characterized as antibiosis. But this notion he uses to bolster the conclusion that very little cultural borrowing went on, failing to realize that "antibiosis" implies a variety of acculturative processes (reactive adaptation, stimulus diffusion across a barrier), no less than does symbiosis.⁽¹⁹⁾

Because of the excessively valorative judgments concerning what is historically most valuable or worthy, the polemic has had the effect of narrowing the scope of historical investigation considerably. From the point of view of assessing Islamic impact on Christian culture, the best evidence has generally not been used nor recognized for what it was. (I refer, for example, to the pervasive diffusion of eastern craft technologies throughout the entire Mediterranean basin.). In terms of stimulation of research, Castro has mainly influenced literary historians. Sánchez-Albornoz's stimulus to intercultural studies has been so negative as to shut off whole areas of investigation. For example, since he believes that Mozarabs (Arabized Christians who fled Islamic Spain and settled in Christian Spain) were only superficially Arabized and in any case could not transmit elements of eastern culture because there were none in al-Andalus, there has been no research on the social organization of Mozarabs in ninth-century [13] León; no examination of changes that they may have introduced into the dietary regime or agricultural techniques of the country; no examination of their role in the transfer of technology, whether artisanal or agrarian; no study of their impact upon urban institutions and economic life; and a probable playing down of their cultural role in monasteries of Mozarabic foundation. Thus, regrettably, the nineteenth-century view that the Muslims of Iberia exceeded those of the East in culture, has been replaced among Sánchez-Albornoz and his followers by the view, more tendentious if less romantic, that the culture in question was not Eastern at all, but "Spanish."

4.A Question of Names

The names found throughout this book describing the geographical hearths of the ethnic groups that have inhabited the Iberian peninsula have been used at different times in different senses. The historical emergence of such names as Spain, Castile, Catalonia responds to discrete processes of cultural differentiation and ethnic ascription and, as Castro indicated, signals diachronic boundaries between different cultures. Because such processes are among the central themes of this discussion, they require meticulousness in the use of geographical terms with ethnic connotations, lest careless usage give rise to anachronistic confusion of people of one culture with those of another.

Spain is meant herein as a geographical term, defining the territory presently occupied by the Spanish state. Referring to all the medieval Christian territories together, I prefer to

allude to the "Christian kingdoms," or to specific ones. In the high middle ages, Arab writers referred to all territory south of the Duero (and later any Iberian territory held by Muslims) as al-Andalus, whereas Spain (Isbaniyya) referred to the peninsula at a geographic entity. Regions to the north of the Duero were sometimes lumped together as Qashtalla (Castile) or defined more specifically. Those regions of the Upper Ebro Valley and Old Castile where summer raids were made were called Alaba wa'l-Qilâ' ("Alava and the Castles"); or reference was made to Jilliqliya (Galicia) or Banbalûna (meaning either Pamplona or Navarre, in any case the homeland of the Basques -- al-Bashkûnish).⁽²⁰⁾ For the Christians, on the other hand, Spain (Spania) was more of a cultural concept, defining broadly the area which had fallen within the Visigothic sphere of influence, sometimes even [14] including the region of Narbonne, on the northern side of the Pyrenees. According to Castro, the Romance form *España* was first used by those living in Septimania and Provence to refer to Muslim-held territory, the origin of refugees (*Hispani*) seeking a home in Carolingian lands.⁽²¹⁾

The term universally used by Arabic-speakers for those lands under Islamic control was al-Andalus. The origin of this term has confounded philologists and historians for years and there is no conclusive explanation to date. It has generally been supposed to relate to the Vandals, who passed through the peninsula in the fifth century on their way to North Africa. Thus it is puzzling why the Arabs should have named their Iberian Province after people who no longer lived there. One conjecture is that Berbers of North African regions adjacent to the peninsula may still, in the early eighth century, have referred to it as the "land of the Vandals," a hypothetical *zamarz Wandalus* or *tamurt Wandalus*. Since many Berber nouns have genitives with a prefixed *w-*, the Arabs would have translated this as *bilad al-Andalus*, "land of the Andals." Another theory, less contrived, ascribes the name to a mythical Atlantis, which later Arab geographical writers tried to relate to the Atlantic Ocean. The term al-Andalus appears as early as 716 in bilingual coins, as the translation of Spania.⁽²²⁾

Thus the name of this medieval Islamic province (and then nation) located on the Iberian peninsula is al-Andalus. Its inhabitants were Andalusis; to call them Andalusians is misleading because that usage connotes the present-day region of Andalusia, whose boundaries are smaller than those of the historical al-Andalus.

Countless books and articles refer to Islamic, Muslim, Arabic, or Moorish Spain. Although the juxtaposition of "Islamic" and "Spain" implies, as Castro has said, a contradiction in terms, it is preferred to the others. The form Muslim can, in correct Arabic usage, modify only a person, not an inanimate object. It is also preferable to the others because it connotes the dominant religion, Islam, as an apposite to "Christian Spain." Arabic Spain is culturally appropriate, since Arabic was the primary language spoken there, but ethnically misleading, since the population was composed mainly of Hispano-Roman converts to Islam and Berbers and there were few Arabs in the population. Moorish Spain, besides being archaic and romantic (conjuring up images from Washington Irving's *Tales of the Alhambra*), is also misleading on a number of grounds. Strictly speaking, Moors were the Mauri, Berbers who lived in the Roman [15] province of Mauretania; therefore its use stresses, sometimes by design, the Berber contributions to Andalusian culture. In English, Moor has racial connotations (e.g., Othello, a negroid "Moor"; the "black-moor" of the

standard English version of Aesop's fables) of blackness, whereas many Berbers are fair-haired and blue-eyed. In Spanish, for reasons already hinted at, the term *moro* is derogatory.

Notes for the Introduction

1. Fear of strangers is a commonplace topic in psychoanalytic literature. Among Europeans, the Hindu frequently appears as an object of strangeness; see Angel Garma, *The Psychoanalysis of Dreams* (New York: Delta, 1966), p. 88. For references to fears of "Moors" in recent Spanish psychological literature, see Gregorio Nieto, "Sobre el estado de enajenación mental del procesado M. G. D.," *El Siglo Médico*, 93 (1934), 695, where a psychotic dreamed that the Moors were invading Spain ("Que los moros entraban en España y con burros llevaban los muertos al hombro y hundían las casas, y cuando caían salían serpientes y me daba tanto miedo, que me fuí con unos niños al cementerio y nos hablaban los muertos"), or the case of a man who suffered the delusion that his wife had committed adultery with a series of sixteen Moors encamped in his neighborhood; B. Llopis Lloret and A. Escudero Ortuño, "El delirio de infidelidad conyugal múltiple," *Actas Luso-Españolas de Neurología y Psiquiatría*, 7 (1948), 218.

2. There are numerous adequate surveys of the period, both in Spanish and English; see Bibliography, pp. 302-303.

3. On this typology, see Anthony Leeds, "Brazilian Careers and Social Structure: An Evolutionary Model and Case History," *American Anthropologist*, 66 (1964), 1322.

4. See Maurice Lombard, *Espaces et réseaux du haut moyen âge* (Paris-The Hague: Mouton, 1972), p. 63.

5. On popular attributions of "Moorish" origin to hydraulic structures in the middle ages, see Thomas F. Glick, *Irrigation and Society in Medieval Valencia* (Cambridge, Mass.: Harvard University Press, 1970), pp. 235-240. On popular diffusionism as an anthropological problem, see Fernando Horcasitas, "La mentalidad difusionista popular," *Anales de antropología* (México), 6 (1969), 153-167.

6. Richard Ford, *A Hand-Book for Travellers in Spain*, 2 vols. (London: John Murray, 1845); Thomas F. Glick, "Richard Ford and Spanish Culture," *Texas Quarterly*, 14, no. 3 (Autumn 1971), 67-79.

7. Julian Ribera Tarragó, *Orígenes del justicia de Aragón* (Zaragoza: Comas, 1897); Thomas F. Glick and Oriol Pi-Sunyer, "Acculturation as an Explanatory Concept in Spanish History," *Comparative Studies in Society and History*, 11 (1969), 145; Thomas F. Glick, "La historia y la antropología: Recordando al arabista Julián Ribera," *Las Provincias* (Valencia), December 12, 1965.

8. On the various recensions of Castro's work, see Bibliography, p. 314; see also, Guillermo Araya, *Evolución del pensamiento histórico de Américo Castro* (Madrid: Taurus, 1969).

9. Claudio Sánchez-Albornoz, *España: Un enigma histórico*, 2vols. (Buenos Aires: Editorial Sudamericana, 1956), as well as the more recent formulation of his position in the polemic, *El drama de la formación de España y los españoles* (Barcelona: EDHASA, 1973).

10. Américo Castro, *The Spaniards* (Berkeley: University of California Press, 1971), p. 40.

11. Sánchez-Albornoz, *España: Un enigma histórico*, I, 126. For specific allusions to evolution, *ibid.*, p. 50 (monophyletic origin of races), and p. 63 (Ortega reference). Note that *potencial operative* is very much the function of a genotype.

12. On late-nineteenth-century Spanish Catholic approaches to the species question, see Thomas F. Glick, "Spain," in *idem*, ed., *The Comparative Reception of Darwinism* (Austin: The University of Texas Press, 1974), p. 343.

13. The notion of diachronic cultural boundaries underlies much of Castro's analysis, but see "Los visigodos no eran aún españoles," *Nueva Revista de Filología Hispánica*, 15 (1961), 1-3. Sánchez-Albornoz's remark on the "curve of Hispanicity" came in a notorious rejoinder to S. M. Stern's critique of his "El Islam de España y el occidente," in *L'Occidente e l'Islam nell'alto medioevo*, 2 vols. (Spoleto: Settimane di Studio del Centro Italiano di Studi sull'Alto Medioevo, 1965), I:385. In the same interchange, Sánchez-Albornoz castigated Stern for ignoring "the idiosyncratic heredity of each historical community" (384). He alludes to the "genetic curve" which led to the crystallization of Spanish culture in *España: Un enigma histórico*, pp. 10, 70.

14. On the latency of temperamental inheritance (really, incomplete expression of the cultural genotype), see Sánchez-Albornoz, *El drama de la formación de España*, p. 71.

15. On *mundanidades*, see Spoleto discussion (n. 13, above), p. 377; cf. *España: Un enigma histórico*, I: 665 (*exterioridades*).

16. Sánchez-Albornoz, *España: Un enigma histórico*, I: 157, 177.

17. Castro, *The Spaniards*, p. 180; on adstrates, see Arnald Steiger, *Toponimia árabe de Murcia* (Murcia: Academia Alfonso X el Sabio, 1958), p. 6.

18. Castro, *The Spaniards*, p. 243 (Castro's emphasis); see also *ibid.*, p. 314, where the "Spanish people *willed* to have done with the Jews and the Moors" (Castro's emphasis). On the explanatory inadequacies of the concept of *convivencia*, see Glick and Pi-Sunyer, "Acculturation as an Explanatory Concept," p. 147.

19. On antibiosis, Sánchez-Albornoz, *España: Un enigma histórico*, I: 249.

20. To al-Idrisî, nevertheless, Castile lay to the north of the central mountain system, "Spain" to the south; José Antonio Maravall, *El concepto de España en la edad media*, 2nd ed. (Madrid: Instituto de Estudios Políticos, 1964), p. 199. On Arabic terms for Christian regions, see *Encyclopaedia of Islam*, 2nd ed. (hereafter cited *EF*), 4 vols. to date (Leiden: E. J. Brill, 1960-), I: 348, 1011-1012, II: 541-542.

21. Maravall, *Concepto de España*, chapter 2; Américo Castro, *Español, palabra extranjera: razones y motivos* (Madrid: Taurus, 1970), pp. 7-21.

22. Werner Wycichl, "Al-Andalus (sobre la historia de un nombre)", *Al-Andalus*, 17 (1952), 449-450; Joaquín Vallvé, "Sobre algunos problemas de la invasión musulmana," *Anuario de Estudios Medievales*, 4 (1967), 361-363.

AT THE CROSSROADS OF CIVILIZATION

1. The Arab Conquests: Opening or Closure

[19] The global impact of the Islamic conquests has been an issue of historical debate since Henri Pirenne formulated the problem a half century ago. In Pirenne's view, the conquest of the eastern and southern shores of the Mediterranean, of Spain, and of strategic islands had shut off the mainsprings of the movement of world trade which had flourished during the late Roman times, with the result that western Europe felt an intensification of ruralization and was impelled to return to a closed, moneyless, "natural" economic system. The conquests, then, set in motion a chain of events that was, centuries later, to result in the shifting of the balance of power in Europe from the Mediterranean region northward.

In fact, the Islamic conquest had more nearly the opposite effect than that posited by Pirenne: it opened the Mediterranean, previously a Roman lake, and, by connecting it with the Indian Ocean, converted it into a route of world trade.⁽¹⁾ Initially, there was no dislocation of the international economic system and, in the 690's when 'Abd al-Malik tried an economic blockade against the Byzantine Empire, only a limited and partial closure was achieved: only the eastern Mediterranean was affected, and although the flow of certain items, such as papyrus, was interdicted, other products, such as spices, traveled as before. When Byzantine power reasserted itself, between 752 and 827, it was the Byzantines who closed off trade, not the Arabs. During this period there was indeed a retreat from the Mediterranean, but a double retreat: the Franks to Germany, the Arabs to Iraq. Spain, it appears, was minimally affected by this situation, owing to a tacit alliance of the Umayyad Emirate with the Byzantine Empire in mutual opposition to the Franks.

The result of Byzantine-Arab confrontation was to throw the former into a situation of economic dependence on western Europe for the raw materials it could no longer obtain from the East and to make the West a market for Byzantine goods. This was a reversal of the economic balance of Roman times, when the West had been dependent on the East. By the tenth century, when the Muslims had taken control of strategically [20] important islands (Crete, Sicily, the Balearics) Islam effectively controlled the Mediterranean, which did not constitute a barrier to trade, but rather a medium whereby all bordering states could participate in a world economy, fertilized by healthy injections of Sudanese gold.

Western Europe, the Byzantine Empire and the Islamic world formed an interdependent economic system, the dynamics of which can be seen in the flow of gold from the Islamic world to western Europe (in exchange for raw materials) and then to the Byzantine East (for luxury items and spices). More than trade underlay this relationship. The ratio in value between silver and gold throughout the middle ages differed in each of the three sectors, and gold tended to move from regions where it was less highly valued to those where it was worth more; the flow of silver followed the opposite route. The result of this movement was to encourage the development of monetary systems of exchange, whether

based on a gold or silver standard, and, together with specific trade relationships, explains the prevalence of silver in early medieval Europe, of gold in Byzantium, and of a bimetallic system in the Islamic Empire. Nor was this system entirely closed, because of trading relations with the Far East.

In the eleventh century, a cycle of invasions disrupted the world economy of the high middle ages (although, once again, the Iberian peninsula was minimally affected at this time, inasmuch as the Almoravids who conquered al-Andalus also controlled the Sudanese gold routes). If the argument for economic closure falls, what can be said of the political and cultural repercussions of the Islamic onslaught?

As Pirenne's views came under scrutiny, it became increasingly clear that the issue of the opening or closure of the Mediterranean world transcended economic issues and revealed the interdependence of economic factors with broader socio-political and cultural issues. Although it is now clear that there was no economic closure, the two halves of the Mediterranean world were no longer united by a common heritage, and in this sense -- that of mutual perceptions -- the conquest did erect a barrier which, although permeable to many kinds of cultural elements, perseveres to this day. The sense of a shared community, the particular stamp of the Roman Imperium, was gone forever.

Indeed medieval people tended to think of culture and religion as coextensive or coterminous categories, and therefore of a unified Christianitas in opposition to Islam. In reaction to the Islamic conquests, impinging upon the European heartland from two directions, there emerged the [21] notion of Europe as a geographical entity which was also the seat of Christianity, a criterion amply justified by the coterminality of the religious and political bounds of the Islamic Empire. Thus the notion that appears in the Christian kingdoms of northern Spain of the common cause *of cristianos* (taking precedence over regional ethnic denominations) against *moros* was part of a generalized phenomenon.

Therefore, although we intend to study the internal development of Islamic and Christian societies in Spain and their interrelationships, we will not lose track of their embeddedness in a larger system of cultural and economic exchanges. Rather, we will be concerned with the ways in which the larger system impinged upon the two societies, from the changes in the human landscape directly resultant from the emplacement of the peninsula in that wider world to more subtle structural and perceptual repercussions.

2. Diffusion, Transport, Movement

The Muslims inherited the Roman Empire, not only its territory but its peoples. The importance of this fact has been obscured by the vast cultural changes which formerly Roman territories underwent. By unifying the area again, the Muslims created a medium through which technologies and ideas could be easily diffused from one end of the Empire to the other.⁽²⁾

Diffusion is one of the crucial ingredients of innovation, whether technological or cultural, and its particular contours will be outlined below. But the persisting influence of the Roman world on the Islamic Empire has generally not been emphasized.⁽³⁾ To be sure,

many of the physical structures of the classical age survived more or less intact. Towards these the Arabs had an ambivalent attitude: on the one hand, reverence for the ancients (*al-'uwal*), especially for their mastery of technologies unknown to nomadic peoples; on the other, the plundering of Roman ruins for their materials without regard to the origin or aesthetic worth of the structure.⁽⁴⁾

But more than this survival of Rome as a kind of vague memory, there was a persistence of local custom regulating, in particular, the agricultural year and the utilization of resources (particularly water) which eventually entered the corpus of Islamic law. Al-Mâwardî, a Shâfi'î jurist in the Andalusî tradition, noted the special place in Islamic law of irrigation canals dug by the ancients,⁽⁵⁾ and there is good reason to [22] assume also the direct borrowing of Roman water-allocation principles by the Muslims. Roman law, which may be regarded as a compendium of customary Mediterranean usages, has never been compared systematically with Islamic law, generally assumed to have had radically different and highly idiosyncratic roots.

The movement of diffusion created by Islamic expansion in the high middle ages was, in general outline, from China and India in the East, radiating by land through central Asia, by sea to southern Arabia and the eastern Mediterranean, and then westward to North Africa and Europe. The East-to-West movement is constant; the Islamic world is its focal point; and, throughout, Persia appears to have been an extremely active hearth of cultural innovation in a wide variety of areas -- trade, technology, science, the revival of pharmaceutical interests, art, literary themes, music, agricultural technology and culinary tastes. The central place of Persia in this movement seems explicable in terms of the high level of economic development of the Sasanid Empire relative to the Arabs during the epoch of conquest. The Persian economic system (based on dynamic urban centers supported by intensive irrigation agriculture, which permitted the maintenance of a large population) provided the model utilized by the Arabs in the economic development of the conquered areas. Persia's economic domination in the East helps to explain the diffusion of specifically Persian techniques, artistic themes, and ideas to the West in early Islamic times.⁽⁶⁾ The process of diffusion has, of course, both spatial and cultural dimensions. There are barriers which hinder, and mechanisms which promote, the diffusion of specific elements which may be geographical or cultural (or a combination of both). Furthermore, these mechanisms, of whatever nature, act in very selective ways, depending on what is being diffused. Needham points out, for example, that the barriers, cultural or geographical, that blocked the transmission of Chinese science through Central Asia and into the Islamic Middle East had no such effect on technical ideas, whose transmission continued uninterrupted from East to West over a millennium..⁽⁷⁾

The view thus far presented, that the high middle ages were characterized more by openness than by closure follows from Fernand Braudel's notion of networks, techniques, and media of communications as constituting an infrastructure upon which exchanges, whether economic or cultural, take place.⁽⁸⁾ This infrastructure was composed of a mixture of land and maritime communications, with characteristic links between them.

[23] The crux of the problem of land transportation in Spain during this period, and generally throughout all the lands of the former Roman Empire, was the extent to which

Roman roads survived. To the extent that they did, they formed a ready-made grid for the movement of travelers, commercial traffic, and, we will note in the case of the conquest of Spain by the Muslims, armies. But in fact, in East and West alike, Roman roads tended to decay, for different reasons. In the West, the fractionation of jurisdiction typically associated with a feudalized society made it difficult to organize large-scale road-building or maintenance projects. Alfonso the Wise stated, as a general rule, that citizens of towns were under the obligation to maintain "the pavements of the great highways and of the other roads which are public," a generalization that reflects the widespread custom that towns had the right to demand that its citizens spend a specified time in *corvée* work on roads and bridges.⁽⁹⁾ Stretches of Roman roads in good condition tended, if they passed through seignorial domains, to be maintained at the expense of privatization, symbolized by the collecting of tolls by the lords concerned. In places where Roman roads were abandoned and no new roads built, a road became a footpath, and the very concept faded in an abstraction: "more an abstract right of passage than an actual strip of land."⁽¹⁰⁾ Travelers would follow a road if there was one, or, if not, would strike out across untracked land. The increasing development of sheepways (*cañadas*) provided an increasingly viable alternative grid for the traveler on foot.

In certain areas, maintenance and continued use of Roman roads were reinforced by economic stimuli. Trade between the Mediterranean coast of Spain, the Ebro Valley, and trans-Pyrenean Europe took place along the Roman system; when the pilgrimage to the tomb of St. James in Galicia created, through the demands of travelers and commerce, the need for a passable land route, Roman roads were used where possible, neolithic routes were revived, and if these did not fulfill the requirements of secure and efficient communication, the routes were changed if the public authority was strong enough to mobilize the necessary resources, as when Sancho the Great of Navarre changed a section of the road to Santiago in the early eleventh century to make it safer. Population centers not on Roman roads were, as if by definition, isolated. In the eleventh and twelfth centuries, when commerce revived, it acquired orientations generally dictated by the surviving Roman roads and bridges, as for example in the case of Salamanca, where traffic from the south moved along [24] the Roman road from Cáceres, across the Tormes over the Roman bridge, into the town, and out again along the Roman highway to Zamora.⁽¹¹⁾

As population increased and settlement became denser, the documents of seignorial domains began to mention new roads (*via nova*), needed to organize such holdings more efficiently. But that many of these roads must have been no more than footpaths seems evident.⁽¹²⁾

Conditions did not favor the use of wheeled vehicles in either West or East. Chivalric values tended to exalt the horse and to disdain the use of wheeled vehicles. Even so, the ill state of repair of most roads made passage for such vehicles difficult, if not impossible. A revealing Castilian document of 972 gives license to the monks of Cardeña to drive "a cart through whatever place it might go; if there is no direct route, we give license to go through woodlands, through cultivated fields, through vineyards, and to cut across boundaries in order to traverse the way with cart, horse, or pack mules."⁽¹³⁾ This is a striking commentary on the difficulty of transportation and communication under conditions where a cart could better be driven through someone's vineyard than along the

established way -- the more so in view of the sensitivity of medieval landlords to the sanctity of property boundaries.

In the Islamic world, wheeled vehicles disappeared completely, and all long-distance land travel was aboard camels, horses, donkeys. The disappearance of the cart in the East, antedating by several centuries the age of Arab expansion, was associated with a technological innovation, the rigid North Arabian camel saddle, more secure than its predecessor, which made the camel a more effective military animal, and with a social phenomenon which this innovation reinforced: the ascendancy of nomads over settled societies. "In schematic summary," Richard Bulliet reasons, "the North Arabian saddle made possible new weaponry, which made possible a shift in the balance of military power in the desert, which made possible the seizure of control of the caravan trade by camel breeders, which made possible the social and economic integration of camel-breeding tribes into settled Middle Eastern society which made possible the replacement of the wheel by the pack camel."⁽¹⁴⁾ In fact, there is evidence to show that even before the Islamic Empire was established, transport was more economical by camel than by cart, by a factor of twenty percent, and the subsequent change in the socio-military balance of power, in favor of nomadism, simply accentuated the camel's superiority and hastened the demise of wheeled vehicles throughout the Empire. A [25] further technical improvement, the development of a pre-hump camel saddle by North African Berbers, also encouraged the commercial use of this animal, a movement which developed into the great trans-Saharan caravans of the high middle ages, to the detriment of the cart. The ascendancy of the camel should not obscure the role of the horse, for the Arab tribesman was as obsessed with the horse as was the European knight. Camel-breeding was minimally practiced in al-Andalus, whose warriors used horses: the huge stables maintained by the Caliph at Madîna al-Zahrâ' are an apt symbol. But horse-breeding, Bulliet points out, must be sustained by a higher degree of the nomads' integration with settled society than is needed to support a camel-based communication system: the needs of the horse for grain, and iron for bits and shoes require an urban-based economy.

Visigothic economic decline and disregard for roads doubtless led, in Bulliet's view, to a substantial decline in the use of carts before 711, in favor of pack mules, which continued to dominate land transport after the conquest. Muslims in Spain, then, did not use carts for overland transportation, although medieval Arab chronicles report an apparent anomaly: "Pseudo-Ibn Qutaiba" wrote that Mûsa ibn Nusayr had thirty carts made in Algeciras in which he loaded booty to be taken to the East, and al-Maqqarî also states that wheeled vehicles were used for transporting the booty.⁽¹⁵⁾ If true, indigenous craftsmen would have constructed the carts because the technique had by then been lost among both Arabs and Berbers.

Merchants and other people traveling overland in the Islamic world rode donkeys or mules. If the journey was part by sea and part by land, a saddle was taken along and a donkey hired when the overland portion of the trip began.⁽¹⁶⁾

Travel in the middle ages was characterized both by its slowness, which had the effect of retarding all economic processes, and by its uncertainty. Distances, especially in maritime travel, were thought of in days, rather than in miles (by the common man; geographers

reckoned in miles) and the time it took to traverse the same two points varied widely. The distance one could cover overland, riding an animal, ranged from 30 to 50 kilometers a day, the lower figure more realistically approaching the mean, in all probability. In the tenth century it took one week to travel from Algeciras to Córdoba.⁽¹⁷⁾

How permeable was the political frontier between Christian and [26] Islamic territory? The Islamic world, as we will observe, was a free trade area where one's place of origin was no bar to travel. Crossing a religious frontier, as in Spain, presented problems of a different nature. G. Menéndez Pidal takes the description in the *Poem of the Cid* of Doña Jimena's journey from the monastery of Cardeña in Castile, into Islamic territory at Medinaceli, through the domain of Abengalbón, to reach The Cid in Valencia, as indicative of the permeability of the political frontier. On this trip she was accompanied by armed knights who were known to the Muslim lords of the domains traversed. Clearly there was a selective factor in travel: it was easier for some people to cross the frontier than for others. In 1143 a French monk in Zaragoza wished to travel to Valencia but demurred, for fear of Muslims. He was advised that if he wanted to go to Valencia he had better go first to Santiago and join up with some merchants who would jointly pay for a safe-conduct. The entire journey was estimated at five weeks. In peacetime, one could conclude that the frontier was quite easily breached, especially in the interests of commerce.⁽¹⁸⁾

In overseas trade, land travel was conjoined with sea travel to form patterns with distinct seasonal rhythms. A crucial link to the East were the land caravans -- called *mausim*, "season," because they departed at set times (late May, most typically, for the summer caravan) --traversing Morocco, Algeria, Tunisia (which was for most of the period the entrepôt between Andalus and eastern commerce), finally arriving in Egypt after a journey of two or three months. Caravans were of particular importance in the winter, when the sea was generally closed to shipping, and in the summer, when the rhythm of trade and travel picked up, to fill in between the more or less regular sailings of organized trading expeditions. Ships sailed in convoys, setting out in the spring and returning in the fall; the convoy from al-Andalus usually arrived in Egypt in late August or early September.⁽¹⁹⁾ Merchants, in particular, preferred sea to overland travel: it was faster, surer, and less hazardous. This was true even when the distance involved was short. A man wanting to travel from Libya to Tunisia around 1140 was advised to accomplish this mission by taking a boat first to Seville and then proceeding to his destination.⁽²⁰⁾

By the early twelfth century, a direct shipping route from Egypt to al-Andalus had been established -- between Seville and Alexandria, or Almería and Alexandria, the latter voyage taking sixty-five days, approximately, in the 1130's. A sailing from Tripoli to Seville took about eight [27] days with a favorable wind. From an eastern Spanish port, a Muslim pilgrim could gain Medina in as little as twenty-five days, but many Andalusí pilgrims took up to a year to effect the trip.⁽²¹⁾

The extreme mobility possible within the Mediterranean world gave it an undeniably cosmopolitan tone. A mid-eleventh-century letter records that its bearer, a Jew from Khurâsân (eastern Persia), had been extended the recommendation of the Gaon of Jerusalem, upon the advice of friends in Seville. In such an atmosphere, commuting back and forth between al-Andalus and the East was not in the least out of the ordinary. A

Persian merchant would accompany his textile goods to al-Andalus; another Jewish merchant, from Badajoz, traded in Jerusalem and Syria. Political boundaries were no hindrance to travel, and discriminatory treatment of foreign travelers or merchants was held to be scandalous. For this reason, at the base of which was a notion of law that was personal and not territorial (persons were judged according to the laws of their religious community), S. D. Goitein characterizes the Islamic world of the eleventh and twelfth centuries as a free trade area, a kind of medieval common market. This communications network, shared by Christians and Jews as well as Muslims, was the palpable expression of the notion that there was "blessing in movement" (*fi'l-harakabaraka*), a value which had repercussions well beyond the strict domain of commerce⁽²²⁾

The conquest that brought most of the Iberian peninsula into this world did not thereby exclude the Christian kingdoms. As Maurice Lombard suggested, the two points at either end of a given trade route ought not to be viewed as *termini*, but rather as foci of secondary diffusion, whence goods and ideas carried along those routes are further diffused.⁽²³⁾ While not minimizing the rural nature of Christian Spanish society in the high middle ages, one must also note that the contacts between the two sectors of the peninsula were conditioned by the inclusion of al-Andalus within this great network of open commercial and cultural communication.

3. The Collapse of the Visigothic State and the Islamic Conquest

The Visigothic state which the Muslims found such an easy victim was an ethnically stratified society, with a fragmented political structure, a depressed and unbalanced rural economy, and a town life which was rudimentary at best. These Goths (who also called themselves Thervings, or [28] "People of the Woods") were a herding people who, entering the peninsula in the early sixth century, tended to settle in areas ecologically suited to their traditional economic pursuits. Thus the greatest concentration of Visigoths settled in a triangle traced by Palencia, Toledo, and Calatayud, with the densest settlement in the present province of Segovia, the Campi Gotici, or present-day Tierra de Campos. About 200,000 Goths ruled an indigenous population of about eight million Hispano-Romans as a military elite. The ethnic cleavage between German-speaking rulers and Latin-speaking subjects was heightened by religious difference; the Goths were Arian Christians who denied the divinity of Christ, while the Hispano-Roman majority was Catholic.

The separation of the two groups was supported institutionally by a dual administrative and legal system: each province had a Roman governor, who administered Roman law to the Hispano-Roman population, and Gothic officials (duke or *dux* at the provincial level, count, *comes civitatis*, at the town level), who dealt with infractions committed by Visigoths, according to German customary law, and who had some jurisdiction over Romans as well. There were invidious legal distinctions; intermarriage between Goths and Romans was forbidden until 652, when Recceswinth reformed the kingdom's administrative and legal system by abolishing Roman law and, with it, the dual system of justice. But this move, in the view of E. A. Thompson, rather than promoting the fusion of the two groups, served only to heighten ethnic tensions. By abolishing Roman law, the king had deprived the Hispano-Romans of their co-equal legal status and relegated them to second-class citizenship. Thompson's view controverts the generally accepted opinion that

Recceswinth's reforms consolidated the moves toward fusion set in motion by the conversion of the Goths to Catholicism under Reccared a half century or so before.⁽²⁴⁾ In terms of the dynamics of this kind of a stratified social system, with an elite minority ruling a majority of a different ethnic group, Thompson's version is doubtless correct. The Goths, having converted, for political reasons, to the majority religion, reacted to the competition afforded by the Catholic elite and feared being engulfed by the sheer numbers of Hispano-Romans. Having done away with one of the deepest cleavages between the groups by conversion, they had to sharpen lines of socio-economic differentiation, and this could not be accomplished while the Romans retained the legal safeguards of a separate administrative system. Once that system was abolished, the Romans had to play [29] according to rules set by the Gothic elite, who had the military and economic power (a system tending toward a "feudal" model). Thus, paradoxically, the religious and legal merger of the two peoples proved only fictive; the intense stratification of the society along ethnic lines was reinforced rather than diminished, to the point where distinctions between Romans and Goths persisted even after the Islamic conquest.⁽²⁵⁾ At the same time, the political structure of Visigothic society manifested distinct disintegrative tendencies, as the dukes tended to make their provinces increasingly autonomous units which they were able to control tightly by granting land to their own vassals in return for loyalty and military service.

Little is known of the agrarian economy of Visigothic times, except that an economic division of labor further distinguished the two peoples: the Goths were herders (their law code, the *Forum Iudicum* -- *Fuero Juzgo* in Castilian -- contains specifications regulating herds dating from the sixth or seventh centuries) and the Romans stereotyped them as crude and ignorant, the last people to learn writing,⁽²⁶⁾ much in the same way as Arabs were later to portray the Berbers, another herding people.

The Hispano-Romans followed the general pattern of Mediterranean agriculture: cereal grains (wheat and barley), grapes, and vegetables grown in irrigated fields in the Ebro Valley and the Eastern littoral.⁽²⁷⁾ What is clear is that the entire economy was in a state of profound disarray and agriculture was ruined as result of a series of natural disasters beginning in the seventh century. Perhaps we can accept at the root of this string of bad harvests, famine, and plague Ignacio Olagüe's theory of a general climatic shift in the western Mediterranean world, beginning in the third century A.D., which had the result of making the climate drier and hotter and which reached crisis proportions in the high middle ages, forcing a greater dependence on irrigation agriculture in North Africa and Spain.⁽²⁸⁾ Medieval chronicles noted famine and plague in the reign of Erwig (680-686), when half the population was said to have perished. Plagues of locusts were reported. There can be no doubt that the constant political turmoil of late-seventh- and early-eighth-century Spain take on more poignant meaning if set against a background of worsening harvests, prolonged drought, famine, and depopulation. Moreover, it makes more intelligible the shift in the balance of peninsular agriculture, away from dry-farming and herding, towards an increased reliance on irrigated crops, during the Islamic period. Islamic society in Spain was able [30] to adjust to an arid ecology by directing the flow of economic resources into the technological adjustments required to increase irrigated acreage, whereas the Visigoths understood only a herding, forest ecology and could not adjust to any other.

If the agrarian economy was in decay, the same can be said of the urban economy and of commerce. Visigothic trade was largely in the hands of Jews, who formed a numerous minority, and foreigners. When economic recession set in, Jews were blamed and a regressive cycle of restrictive anti-Jewish legislation could only have led to more disruptions of trade. The barbarian invasions were further responsible for the physical ruin of much of the urban plant built by the Romans. Archaeological evidence demonstrates that when the Muslim invaders arrived in 711 many Hispano-Roman cities were already largely buried in subsoil.⁽²⁹⁾ In such conditions, it is not surprising that Roman municipal institutions failed to survive the Visigothic domination.

The economic regressiveness of Visigothic Spain is well illustrated by the failure of the Goths to carry on the vast mining enterprise begun by the Romans, who removed from Iberian pits a wide variety of metals, including silver, gold, iron, lead, copper, tin, and cinnabar, from which mercury is made. The relative insignificance of mining in Visigothic Spain is attested to by the winnowing of the full account given by Pliny to the meager details supplied by Isidore of Seville, who omits any mention, for example, of iron deposits in Cantabria. The most important Roman mines have lost their Latin names, generally yielding to Arabic ones -- as in Almadén and Aljustrel -- probably an indication of their quiescence during the Visigothic period and their revival by the Muslims. The Goths may have allowed their nomadic foraging instinct to direct their utilization of metal resources. In some areas mined by the Romans they probably scavenged for residual products of abandoned shafts that remained unworked, and metal for new coinage seems largely to have been provided by booty captured from enemies or from older coins fleeced from taxpayers.⁽³⁰⁾

Thus the failure of the Visigothic state, seen in its unbalanced economy, as well as in its disjointed and incohesive social organization, was also reflected in its technological atony, which was at the core of the elite's inability to adapt to any ecology other than that with which it was originally familiar: the men of the woods never strayed too far from there. They were unable to build on the Roman base. In 483 the duke Salla repaired [31] the Roman bridge at Mérida; yet in 711 the Arabs found the bridge at Córdoba in ruins, just as Mûsa ibn Nusayr was said to have found the Roman-built irrigation systems in disuse.⁽³¹⁾

Receptiveness to technological innovation and intellectual creativity in general are linked, the former more clearly than the latter, to general economic conditions. Thus Antonio Ubieto cites the *Etymologies*, the encyclopedic work of Isidore of Seville, written in the early seventh century, as a typical expression of the state of culture in a depressed economy. Although Ubieto's generalization that encyclopedias are written in moments of cultural stagnation may be overdrawn, his characterization seems a valid enough observation on the *Etymologies*. When referring to mining, Isidore seems scarcely to understand the technologies involved.⁽³²⁾

However reduced its straits and confined its visions, Visigothic culture was not, for that, totally isolated. It is tempting to see the Islamic conquest as the act which placed Iberia back into the mainstream of "world" civilization -- in Toynbee's fanciful and hyperbolic characterization, a re-trieval of the peninsula, once Punic in his view, for "Syriac society." But, as Jocelyn Hillgarth notes, Visigothic Spain had succeeded North Africa as the seat of

ancient and Christian letters and in Isidore's time had many cultural and artistic links with the Byzantine East, as well as with the pre-feudal societies of Merovingian France, Ireland, and Britain.⁽³³⁾

The immediate result of the Islamic conquest, however, was to intensify greatly the relations of the peninsula with the lands encompassed in the Islamic Empire and to reduce, but by no means terminate, relations with lands to the north -- or perhaps, more accurately, such relations with Christian Europe were channeled selectively. Direct commercial contacts never ceased; intellectual and artistic contacts were achieved by more subtle and circuitous means.

The conquest of 711, staged in Morocco and carried out mainly by Berber horse cavalry under Arab command, is, for a phenomenon of such transcendence, poorly understood. Its most salient actors, half-legendary, half-real, conquered nearly the entire peninsula and subjugated its massive population in a matter of five years and without much resistance. The old legend has it that the last Visigothic king, Roderick, had forced the daughter of Count Julian, Byzantine governor of Ceuta, a *casus belli* which led to Julian's asking for Muslim help in coming to the aid of Roderick's domestic enemies. It was relatively common, of course, for medieval people to explain social and political phenomena whose motives [32] were incomprehensible to them by imputing events to the personal quirks of one leader or another. In any case, according to Arabic and Christian sources alike, after a small reconnoitering expedition led by Tarîf in the summer of 710, a party of 7,000 Berbers under the command of Târiq ibn Ziyâd landed near Gibraltar (Jabal Târiq, "Târiq's mountain") on or about April 28, 711. Târiq then occupied the area around Algeciras, sent a request for 5,000 additional troops to the governor of Islamic North Africa, Mûsa ibn Nusayr, and proceeded along the Roman road towards Seville. Meanwhile Roderick, away in the north fighting Basque rebels, hastened southward, gathering a host of "100,000" men. The two armies did battle on the banks of the Guadalete between July 19 and 23, resulting in an Islamic victory and the rout of the Visigothic army, capped by the death of Roderick.⁽³⁴⁾

Most of the elements of this story are unbelievable. In the past century the Dutch Islamist, R. Dozy, who believed these accounts to be as legendary as the *Thousand and One Nights*, noted that many of the elements in early reports of the conquest of Spain (written by writers living in Egypt) simply repeated old traditions having nothing to do with the Iberian peninsula. Later embellishments were added by Christian chroniclers, drawing upon Biblical traditions decidedly apocalyptic in character.⁽³⁵⁾

Julian was more likely a Goth than a Byzantine governor of Ceuta, bearing a generic name, *comes julianus*, the count of Julia Traducta (the Roman name for Tarifa). Tarîf, it seems clear, was an eponymous name concocted to explain the origin of the town of Tarifa. Târlq, too, seems to have been eponymous figure whose name simply meant "chief," according to Joaquín Vallvé.⁽³⁶⁾

Nor does Vallvé accept the view that the crucial battle took place on the banks of the Guadalete, but places the site farther south, near the port of entry, near Gibraltar on the banks of the Guadarranque, a name which perhaps means Roderick's River (Wad al-

Rinq).⁽³⁷⁾ Why did "Târiq" wait for three months in order to march northward to meet the Gothic army? His forces must have numbered substantial horse cavalry to have defeated an army many times larger. If we take the accepted number of troops and boats given by Arabic sources, it is clear that a force of 10,000 to 15,000 men could not have crossed the straits in less than three months.⁽³⁸⁾

The conquest of Spain appears to have been a walk-through. After the first decisive battle, few more challenges of any serious dimension arose. The Muslim columns followed the Roman roads, obtaining the surrenders [33] of key towns, and in many cases leaving Jewish garrisons behind. In most cases, the Muslims demanded full submission to their authority, although in some cases pacts were made with Visigothic lords, guaranteeing them substantial autonomy. Such was the case of the arrangement made with Theodomir in the Murcian district (later called by the Arabs Tudmir, after its former leader), whose early administration therefore probably continued a pattern of local autonomy prominent in late Visigothic times.

4. The Curve of Conversion

The easy conquest of the peninsula is generally assumed by historians to have been followed by a rapid Islamization of the indigenous population, although the evidence for such an assertion is wholly inferential. It must be assumed that the process of conversion to Islam was guided by the same mechanisms that were operative in other societies newly conquered by the Arabs. Based on a study of naming patterns among converts to Islam, Richard Bulliet has described a general process of conversion which he believes to have been the norm in all medieval Islamic societies conquered by the Arabs.⁽³⁹⁾

The essence of Bulliet's hypothesis, based upon common notions of innovation diffusion, is that the rate of conversion to Islam is logarithmic, and may be illustrated graphically by a logistic curve. That is, few adopt the innovation at first, but, as more do, the probability of others following suit increases. In the case of conversion to Islam, the greater the number of Muslims, the greater the probability of contact between Muslims and non-Muslims, and hence of the conversion of the latter. This is a self-generating process and the rate of conversion increases without the necessity of any specific social or political policies, or of *any* factor extrinsic to the process.

It follows from this analysis that in Umayyad times Islam was a "smallscale affair" characterized by the rule of vast non-Muslim populations by a tiny Arab elite for whose social and political needs traditional Arab tribal structure was sufficient. Arabs, and therefore Islam itself, was first concentrated in the towns, and the early chronicles reflect this urban Arab milieu.

At the moment when the logistic curve begins to rise precipitously, there begins an explosive period of conversion during which most of the previously unconverted population turns Muslim. When the conversion [34] process is completed, Bulliet reckons that eighty percent of the original indigenous population converted, with the remaining twenty percent still unconverted, with the status of protected religious minorities.

A number of distinctive social phenomena are associated with this process (although the emergence and sequencing of such phenomena differed from society to society). In the first place, the kind of social movements that attracted converts differed in style and content, depending on whether the converts were a minority or a majority. Millenarian revolutionary movements which attracted converts under the Arab state declined in appeal as the density of the convert population increased and as "old" converts entered the power structure. During the explosive period of conversion, when the composition of society was changing rapidly, abrupt political and social changes occurred within a matter of decades. When the great mass of indigenous people had become Muslim, the kind of society that emerged was radically different from that of the Arab state of the past. Society had become distinctively Muslim, with institutions that reflected the social needs of a majority Muslim population. This was a more self-assured society, able to assert its independence within the Islamic world. Nevertheless, social distinctions arose between "old" and "new" converts, the former typically associating themselves with orthodox religious positions, the latter with movements such as Ash'arism and Sufism.

Bulliet's description of the conversion process, while admittedly a hypothesis, provides a compelling framework for analyzing the dynamics of social, political, and cultural change in the emergent Islamic societies of the middle ages and, at the same time, offers a standard by which to assess such developments in any one Islamic society in comparative perspective.

In the following section, and throughout the book where appropriate, I will attempt to show how Bulliet's hypothesis sharpens and clarifies a number of episodes and phenomena of Andalusí history which are thus far poorly understood. The logistic curve for al-Andalus is reproduced, from Bulliet's data, in Figure 1. The rate of conversion is slow until the tenth century (less than one-quarter of the eventual total number of converts had been converted); the explosive period coincides closely with the reign of 'Abd al-Rahmān III (912-961); the process is completed (eighty percent converted) by around 1100. The curve, moreover, makes possible a reasonable estimate of the religious distribution of the [35] population. Assuming that there were seven million Hispano-Romans in the peninsula in 711 and that the numbers of this segment of the population remained level through the eleventh century (with population growth balancing out Christian migration to the north), then by 912 there would have been approximately 2.8 million indigenous Muslims (*muwalladūn*) plus Arabs and Berbers. At this point Christians still vastly outnumbered Muslims. By 1100, however, the number of indigenous Muslims would have risen to a majority of 5.6 million.

5. The Arab State from Province to Caliphate

The history of Islamic Spain through the tenth century may be conveniently divided into two phases: (1) a period of *adjustment* extending from around 715, when a governor (*wāli*) was appointed and the newly captured territory began to be organized as a province of the Umayyad caliphate of Damascus, until the mid-ninth century, at which time the governmental apparatus was reorganized to bring it into line with a society that had grown vastly more complex since the inception of Arab [36] rule; and (2) a period of *consolidation*, marked by the growing power and wealth of al-Andalus, culminating in the establishment of the caliphate of Córdoba by 'Abd al-Rahmân III, and terminating with the dissolution of the governmental system in the decade 1000-1010. The reign of the emir 'Abd al-Rahmân II (822-852) was a critical epoch of transition, when it was recognized that a higher level of socio-economic organization, the consequence of the rapid pace of urbanization and a change in the scale of the economy, called for a more complex and sophisticated administrative response on the part of the rulers. This apparent lack of fit between Umayyad models and a socio-economic structure that had changed radically from the time of the state's inception called forth a wide-ranging change in values and a broadening of cultural horizons, without, however, altering the basic social structure of an Arab elite ruling a mass of unconverted Christians.

As was true on other frontiers of the Islamic empire, expansion continued until brought to a halt by a combination of enemy resistance, the overextension of supply lines, and the steady attrition of fighting forces as units were assigned to garrison duty in newly captured towns. It is also true that the resistance met by the Islamic columns in southern France was the result not only of a military organization superior to that which they had faced in Spain, but also of a lack of the kind of popular support or at least indifference that facilitated the rapid conquest of the peninsula. Ibn Khaldûn understood this process well when he remarked that there is a relationship between the extent of land a dynasty can occupy and the numbers of people who support it.⁽⁴⁰⁾

Muslim troops had gained the eastern Pyrenees within the first decade of Islamic rule in the peninsula, when Barcelona, Gerona, and Narbonne had been captured. In 719 a Muslim column struck out in the direction of Toulouse. The threat was kept alive until 732, when, in October, Charles Martel defeated an Islamic host under the wali 'Abd al-Rahmân al-Ghâfiqî near Poitiers, a battle often said to have marked a turning point in European history, but which, in the context of the times, was probably just another border skirmish. Indeed, the Muslims held on in southern France until Pepin the Short recaptured Narbonne in 751.

The effect of all this activity in the Frankish sector detracted the attention of the walis from a difficult situation in northwest Spain. The mountains of Galicia had been thinly settled by Berber tribesmen -- whether by traditional predilection or by design of the Arab leadership, Berbers [37] throughout the peninsula tended to be settled in the mountains, while the lowland, much of it irrigated, was held by the Arabs and worked by Neo-Muslim or Christian tenants. In 740 these Berbers had joined with others settled on the lower slopes of the Cantabrian mountains and in the Sierra de Guadarrama, in a general rebellion against the walis, probably linked to North African Khârijism, an egalitarian movement

opposed to Arab domination of the Islamic state. It is likely that Khârijite ideology merely supplied a rallying cry for disaffection born of the more homely suffering caused by the failure of pastures to support the herds. The Berbers were quelled by a newly arrived force of 7,000 Syrian Arabs under Balj ibn Bishr in the autumn of 741. Balj not only defeated the Berber dissidents but took control of the state himself, initiating a new round of tribal infighting amongst northern (Qaysî) and southern (Kalbî or Yemeni) Arabs. Yemenis outnumbered Qaysîs in the new province, but when a strong pro-Qaysî wali emerged in the figure of Yûsuf al-Fihri (ruled 747-756), they tried to forge alliances with Berbers in the hope of unseating their mutual enemy.

The tribal, ethnic, and social conflicts in al-Andalus during this period (which will be analyzed in later chapters) were characteristic of a process of adjustment in which the diverse groups thrown together by the circumstances of the conquest were not so much trying to destroy a state, but rather to create one, through a process of mutual accommodation and adjustment, increasingly mediated and, to an extent, manipulated by the Arab elites who composed the central government.

In 750 a disastrous drought (which Olagüe sees as the final phase of a climatic pulsation that began around 680)⁽⁴¹⁾ causing famine in extensive areas of the peninsula, but particularly the central and northwestern regions, induced the Berbers of Galicia to return to their North African homeland. At this point Galicia was annexed to the kingdom of Asturias, and the Muslims did not make any serious attempt to settle the lands north of the Duero River.

During the early years of Islamic domination, the Muslims were able, in most of the peninsula, to consolidate their rule rapidly, even though the historical commentary tends to dwell upon the constant tribal fighting among Arabs. At one point, the Caliph 'Umar II was said to have written to the wali al-Samh (719-721), suggesting that the Muslims abandon Spain because of their tenuous numerical position there. Al-Samh replied that in fact Islam was widespread and that Muslims formed a large part [38] of the population, an obviously anachronistic account in view of the minimal possibilities for native exposure to Muslims at this early date.

By the time the Syrian junds under Balj's command were ready to settle down in the 740's, there had already arisen a distinction between Arab newcomers and the veterans of early campaigns. These latter, particularly those who had arrived before 716, were referred to as *baladiyyûn* or *ahl al-balad* ("people of the country," equivalent to "natives").⁽⁴²⁾ The social and legal status of these *baladiyyûn* is significant, for they had already ceased to receive the military pension ('atâ') and were paying the normal tithe (*'ushr*) paid by all Muslims. This transit, from soldier to settler, is the best indication that permanent settlement had replaced military occupation as the goal of the conquerors. In contrast, Balj's troops continued to receive the pension. This early phase of consolidation was capped by the seizure of power in 756 by 'Abd al-Rahmân I (called al-Dâkhil, "The Immigrant"), an Umayyad prince who had fled the 'Abbâsid revolution in the East, seeking refuge in the North African homeland of his mother, a Nafza Berber. The Umayyads had many supporters in al-Andalus, notably among the troops of Balj, who had been settled in the south and east of the country. These were Yemeni Arabs, embittered under the rule of Yûsuf al-Fihri, and they were easily

persuaded to join ranks behind the new leader, as emir of a restored Umayyad state, independent of the Caliphate.

'Abd al-Rahmân I's policy was to stabilize the regime, first, by attracting masses of Umayyad supporters from Syria to Córdoba, where they soon constituted a new elite, and, second, by dealing severely with dissidence at home. In the 760's he faced two uprisings by Yemeni Arabs, the first one under ostensible 'Abbâsid patronage, and a more serious challenge from the Miknâsa Berber Shakya, who harassed Umayyad columns from mountain strongholds between 768-776.⁽⁴³⁾

Dissidence in Zaragoza became involved with international politics when the Muslim governor there plotted against 'Abd al-Rahmân along with an 'Abbâsid envoy, finally calling upon Charlemagne for help. The Frankish king besieged Zaragoza in 778 when the governor's subjects refused to open the city to him and retired in failure when news of a rebellion in Saxony reached him. As the Frankish army returned to France, Basque guerrillas fell upon its rear guard at the pass of Roncesvalles, providing the kernel for the much embellished *Song of Roland*. The failure of Charlemagne's campaign doubtless took a psychological [39] toll on the Christians, for it is only after 778 that we hear of Hispani -- Christian refugees from al-Andalus -- fleeing northward to seek asylum in Frankish lands.

Under 'Abd al-Rahmân's son Hishâm I (788-796), who undertook summer campaigns against the kingdom of Asturias, and his grandson al-Hakam I (796-822), the work of pacification continued. Al-Hakam I's reign was troubled by dissidence on the part of the Neo-Muslim majority. One pocket of resistance in Toledo was wiped out in 797 when the Umayyads engineered a banquet of Neo-Muslim dignitaries, whose severed heads landed in the moat ("Day of the Ditch").

Another rebellion in which Neo-Muslims participated, along with Christian elements, was the Revolt of Suburb, referring to an artisan district of Córdoba where a plot to dethrone the emir was concocted by fanatical religious leaders in 805. Al-Hakam finally unleashed his troops in the Suburb, which he had razed. Those who were not killed were exiled from the city-- as many as 20,000 people. Most left the country, one group establishing the "Andalusi" quarter of Fez and another sailing east and establishing itself on the isle of Crete.

Al-Hakam left his son 'Abd al-Rahmân II a pacified but disgruntled kingdom. Because of the general calm at home, the emir was able to mount attacks against Alfonso II of Asturias and against the Franks as well, although he had to face a major Berber and Neo-Muslim revolt in the Mérida region in 828. During the reign of 'Abd al-Rahmân II (822-852), al-Andalus emerged as one of a number of centers of independent power, as the 'Abbâsid state began to disintegrate. 'Abd al-Rahmân II's reign also coincided with the breaking of Byzantine naval power in 827. Although it is probable that direct trade with the East had never ceased, due to a tacit alliance between the Byzantines and the Umayyad emirs against the Franks, the opening of the eastern Mediterranean at this time set in motion a great commercial movement which was to spur the growth of al-Andalus into a wealthy state and to promote the rapid development of its major towns, particularly Córdoba and Seville.

The administrative apparatus of the garrison state which, following Umayyad practices, stressed a decentralized form of political control whereby substantial authority was vested in the town governors, was inadequate to meet the needs of a wealthier, more complex society. Thus it happened that at the moment of greatest tension with the 'Abbâsid state, 'Abd al-Rahmân II initiated an administrative overhaul designed to [40] organize the country's institutions and economy along 'Abbâsid lines. This led centralizing political power by concentrating it in the person of the emir, ruling through a tightly controlled hierarchical central bureaucracy, in which the treasury was the key bureau and, at the same time, by joining political with economic control (expressed in the establishment of state monopolies and in the control of urban markets).

Toward the end of this reign and continuing into that of his son Muhammad I (852-886), the government had to deal with an outbreak of voluntary martyrdoms among the Christians (Mozarabs) of Córdoba. On the whole, this difficult situation was handled with restraint, although the execution of the Christian leadership was a factor that influenced many Mozarabs to emigrate to the Asturo-Leonese kingdom. Muhammad's reign, except for an initial challenge by the perpetually rebellious Toledans (in 854, with participation of an Asturian force sent by Ordoño I) was peaceable, characterized, perhaps, by the consolidation and extension of the bureaucratic norms introduced by his father.

The reign of 'Abd Allâh (888-912, following the two-year reign of al-Mundhir) witnessed what is usually described as anarchy, the near dissolution of the polity under a series of repeated and sustained rebellions. The most serious of the thirty or so that the emir had to deal with was that of the Neo-Muslim 'Umar ibn Hafsûn, who first raised the standard of revolt in 879 in the mountains of Ronda. Ibn Hafsûn was a popular hero who built his support on Neo-Muslim resentment of the Cordoban Arab elite and transformed it into a huge territorial enclave stretching from Murcia to Algeciras in the south, and, on the north, from Ecija to Ubeda. Ibn Hafsûn and his sons held out for nearly fifty years. (The social basis of this and contemporaneous revolts will be analyzed in Chapter 5.) In this period the ethnic focus of rebellion had passed from the Berbers to the Neo-Muslims, whose protest must be placed within the context of the curve of conversion. If the explosive phase had begun in the last quarter of the ninth century (somewhat earlier than Bulliet's projection), the great numbers of recent converts might explain ibn Hafsûn's power. More likely, the *fitna* of the ninth century was the last protest of old converts whose social situation would change radically and suddenly with the appearance of masses of new converts.

The tenth century witnessed the height of Andalusí fame, power, and wealth under three strong rulers, the first of whom was 'Abd al-Allâh's grandson, 'Abd al-Rahmân III, called al-Nâsir ("The Victorious"). He [41] immediately embarked upon a campaign of pacification, spending the early part of his reign wearing down ibn Hafsûn and other rebels. By the 920's internal conditions had stabilized to the point where he was able to bring pressure upon the Christian kingdoms, sacking Pamplona and inflicting heavy losses on the Basque troops of Sancho Garcés of Navarre in 924. At the same time, he began a vigorous offensive and defensive campaign against the Fatimids, whose navy controlled the Mediterranean. He had strengthened his coastal defenses and interdicted the possible flow of troops or materiel directed from North African ports towards ibn Hafsûn's rebels, and in 927 and

931 took the North African strongholds of Melilla and Ceuta, respectively, to serve as advanced posts against the Fatimids.

To underline this opposition to Fatimid power and to strengthen further his internal position, 'Abd al-Rahmân adopted the title of Caliph in 929, a decision dictated by power politics but based in the family's conviction that Umayyads had a stronger right to the caliphal dignity than either 'Abbâsids or Fatimids. The fact that at the same time al-Andalus was in the process of becoming a society with a Muslim majority lent social substance to this decision.

The Caliph now became a grand and distant figure, and, after ruling a quarter of a century, he began to build a palace-city, *Madînat al-Zahrâ'*, outside of Córdoba. He ruled through a hierarchy of slaves and began to import Berber mercenaries to bolster Umayyad military efforts on the northern frontier. 'Abd al-Rahmân died at the height of his power and was succeeded by another strong caliph, the scholarly al-Hakam II (961-976).

Al-Hakam continued to press the Christian kingdoms with constant raids, keeping his militia strong and dynamic through the continued importation of Berber soldiers, and in the early 970's received continuous embassies from the king of Navarre, the regent of León, and the counts of Castile, Galicia, and Barcelona, who came to render homage and tribute before the dazzling strength of the greatest power in Europe.

His death induced a dynastic crisis, leaving the country under the rule of a boy, Hishâm II, but in the actual power of the *hâjib* (chamberlain), Muhammad ibn Abî 'Amir, known as al-Mansûr (the terror-inspiring Almanzor of the Christian chronicles). Al-Mansûr had worked his way up through the state bureaucracy, gaining tremendous popularity among the masses of Córdoba during his tenure as Prefect of the City, when he [42] brought urban crime to a standstill. As *hâjib* he continued to scourge Christian territory, his raids culminating in the sack of Santiago de Compostela in 997, when he razed the cathedral and carried off its bells to Córdoba. When he died while returning from his last campaign in 1002 he seemingly left the state in a strong position. But his military strength was gained at the expense of disrupting the ethnic balance of power upon which the state's political foundations rested. He professionalized the army by detribalizing it (forcing Arabs into mixed units without regard to tribe or place of origin) and by injecting into it large numbers of newly recruited Berber regulars. The coming apart of this structure (discussed in Chapter 6) was prefigured in the changing ethnic and religious balance of power.

Taking the period as a whole, we have seen al-Andalus evolve from a garrison state built on a delicate balance of tribal and ethnic factions, united in a highly decentralized administrative system, an apt instrument for managing this kind of plural society with deep cultural and social cleavages. Centralization and unification became possible in the ninth century, when the burgeoning economies of the great southern cities gave the emir the financial power to underwrite a tighter system of administrative and economic control. It then became possible to narrow some of the cleavages, which brought new tensions. The political success of the Caliphate seems to have been based, first, on its economic success, and, second, on creating a climate for the fusing of Neo-Muslim and Arab elements. With the emergence of a mass Muslim society, its usefulness was at an end.

6. The Christian North to A.D. 1000

During the same period the pace of change in the Christian zones was much slower, obeying different socio-economic imperatives. Fragmented, rural, disorganized in the eighth century, by the end of the tenth the Christian kingdoms had consolidated themselves into distinctive political entities, in which forms of social and agrarian life had evolved which provided the basis for the later expansion and development of those states.

But in A.D. 1000, we are still dealing with a static agrarian society, practically without cities, and dependent in a number of ways on the Islamic economic system. In the eighth century it is possible to distinguish broadly between three zones, differing from one another in social organization and culture. In [43] the west was Galicia, where continuity of settlement had been unbroken from late Roman times and where elements of Roman social organization (a noble elite and servile peasantry) survived. In the center, a continuous mountain belt, from the Cantabrian system in the west to the Pyrenees, was populated by Cantabrian and Basque mountaineers, who also represented an ancient tradition, one of hostility to the power centers of the peninsula. In the extreme east was the future Catalonia, an area only lightly garrisoned by the Muslims and which in the early ninth century came into the orbit of Carolingian political power and social organization.

Before the famine of 750, with Berbers occupying the mountains of southern Galicia, the Muslims' northern line of defense in the central zone followed a line extending eastward from Saldaña in the present province of Palencia, to Amaya, Miranda de Ebro (Burgos province), and Cenicero.⁽⁴⁴⁾ This line, on the southern slopes of the Cantabrian range, was basically that which the Visigoths had fortified against the Vascones and, farther west, the Cantabri (called Astures from the sixth century on). These mountain folk practiced a relatively primitive, unspecialized herding economy and had resisted Romanization and urbanization in late Imperial times. (The intensity of Romanization was strongest in Galicia, and diminished moving eastward: the Cantabri were more Romanized than the Basques of the western and central Pyrenees, who began to speak Romance and become Christian only in the sixth and seventh centuries.)

The resistance offered by these mountaineers to Roman culture is one of the most striking phenomena of late imperial Hispania. During the barbarian invasions, Salvian wrote, the majority of the Hispani sided with the Barbarians, "not wishing to be Roman."⁽⁴⁵⁾

The Visigoths in turn were unable to reduce the territory or its inhabitants to submission. The social structure of these mountainous areas was quite distinct from the rest of the country captured by the Muslims. There were few large estates, a majority of freemen, and scant class differentiation, in contradistinction to the sharply stratified social structure of the Visigothic kingdom. These free men had ample motive to defend their freedom against a new invader.

It is tempting to see, in the early eighth century, a generalized phenomenon of the filling up of abandoned Visigothic niches in central and northwestern regions of one herding people by another. The flight of Visigoths to the mountains would have reinforced and introduced greater organization into the herding economies there. The early armed

struggles [44] between Gothic remnants and Muslim garrisons may have been related to competition between the two groups over pastures that were greatly diminished owing to prolonged drought. (Herders were not the only refugees to flee the Muslims, of course; dry-farmers from the central meseta also fled northward and influenced the agrarian regimes there.)

Thus, in analyzing the origins of the "Reconquest," one must depart, not from the revival of the Visigothic tradition, fomented by the Gothic elite of the Asturian kingdom, but rather from the continuing, traditional stance of fierce independence of the mountain peoples towards whoever was in control in the south. Indeed the very notion of a *re-conquest* involves from a historiographical perspective a number of anachronisms and anomalies. The notion which subsequently became enshrined in Christian ideology, particularly as a concomitant of emerging ethnic differentiation among Christian groups that they, as successors of the Goths, were re-conquering al-Andalus, involves a cultural misapprehension: namely, that those who lost Spain and those who gained it later were identical in culture.

The medieval legend of the origins of the "Reconquest," interwoven with Neo-Gothic strains, places the birth of the movement of resistance at Covadonga, where in 722 a small group of Christians under Pelayo, a Gothic noble, defeated a Muslim column. The richly embroidered account of this skirmish, as it appears in the Chronicle of Alfonso III, reports the death of 25,000 Muslim soldiers, their ranks broken by divine intervention, which caused their missiles to fly back against them. The account given by Arabic chronicles is scarcely more accurate, describing Pelayo's band "thirty wild donkeys" but nevertheless takes note that Pelayo was the ancestor of the Banû Alfonso, traditional enemies of al-Andalus.

Indeed, Pelayo's grandson Alfonso I (739-757) had carved out a small principality in the mountains of Asturias, with its capital in Oviedo, and he began the first tentative steps towards expansion into areas abandoned during the drought of 748-753 by Berbers, or those which had not been completely abandoned but only thinly garrisoned. Later Arabic sources state that the Muslims might have been conquered at this point, had not the Christians also been preoccupied with staving off hunger.⁽⁴⁶⁾ Moreover, the last walis, as noted above, were more interested in the northeastern sector, which held the promise of booty from Frankish towns of the Midi, than they were in the poverty-stricken northwest.

In the middle part of the century the Duero Valley became more or less [45] totally depopulated and came to constitute a no-man's land between the Asturian kingdom and al-Andalus. Around 756, the last year of Alfonso I's reign and the first of that of 'Abd al-Rahmân I, the Christian line (including the buffer zone) followed the course of the Duero from its mouth to Osma and then turned northward, extending into the Basque country. The Islamic frontier (about which more will be said in Chapter 2), representing the line up to which permanent settlement was encouraged, ran from somewhat north of Coimbra in the west, through Coria, Talavera, and Toledo, then swinging north to encompass Guadalajara, Tudela, and Pamplona. The Chronicle of Alfonso III, a twelfth-century document, reports that Alfonso I captured thirty towns (including Lugo, Astorga, Zamora,

Avila, and Segovia) from the Muslims and then withdrew, taking back Christian inhabitants of those places along with him to Asturias, leaving a "desert" (*yermo*) behind him.⁽⁴⁷⁾

It is probable that the drought more than the king was responsible for the depopulation of the Duero Valley, where in any case at least scattered nuclei of herding folk must have remained. Nevertheless, there was a movement of population northward which lent demographic weight to Alfonso I's nascent kingdom and provided new nuclei of settlement which acted to diffuse Christianity among the Basques.⁽⁴⁸⁾

A more organized effort at expansion southward was begun in the reign of Alfonso II (791-842), during which time the mountain people began to move down onto the plain to begin small agrarian settlements in what were to become León and Castile, the first stage of which (ca. 800-835) involved the settlement of the headwaters of the Ebro River (Miranda de Ebro, Mena Valley). Under Ordoño I (850-866) the focus shifts westward; the King was said to have directed the settlement of the deserted towns of León, Astorga, Tuy, and Amaya with people fleeing al-Andalus.⁽⁴⁹⁾ Farther to the east, settlers moved across the Ebro and fortified a line extending from Amaya to Oca.

Under Alfonso III (866-911) the pace of settlement had to be slowed down somewhat, for want of sufficient density of population in the newly settled areas to permit further expansion. Both Alfonso II and Alfonso III attempted to recreate the image of the Visigothic monarchy, by reestablishing the ecclesiastic structure of Visigothic times and by attempting to model their rudimentary royal administration after the more highly developed Gothic model.

In Castile, the line of settlement advanced to the river Arlanza in 870 [46], and to the Arlanzón in the 890's, reaching the Duero in the early tenth century. Here the effort rested during the apogee of Islamic power.

Several points should be made about the progress of expansion in the northwest up to 1000. First, the rate of settlement was determined largely by population density; the Duero line was reached in Portugal fifty years before it was in Castile, because Galicia had a surplus population of settlers, ready to move southward to colonize new lands. Castile, on the other hand, was chronically underpopulated. Second, the expansion of the Christians did not involve the capture of a single town from the Muslims (the only land actually captured during this period was the Upper Rioja in the 920's). By the end of the century the entire region had but one town worthy of the name, León, with a population of only a few thousand.

Farther east, Sancho Garcés I of Navarre (905-925) was able to capture Pamplona and fortify a long line of forts in the foothills of the Pyrenees, after the decline of the powerful Banû Qasî clan made such an advance possible. But no further advances were registered during the tenth century, as 'Abd al-Rahmân III was able to turn the Navarrese back in a series of campaigns in the 920's.

In the eastern Pyrenees a number of mountain counties had taken shape under Frankish patronage (Sobrarbe, Ribagorza, Pallars). The Franks had pushed the Muslims out of

Barcelona in 801 and stabilized the frontier somewhat to the south. The future Catalonia remained within the Frankish orbit until the Carolingian collapse of the mid-ninth century made it possible for the southern counts to establish independent hereditary dynasties. In the 870's Guifred the Hairy, a descendant of the Gothic count Borrell of Ausona, had established his family's control over the counties of Barcelona, Gerona, and the mountain territories of Urgell, Cerdàña, and Conflent. In a movement analogous to the settlement of the Duero Valley, the plain of Vich was settled, beginning under Guifred's direction in the closing years of the ninth century and continuing into the middle of the tenth. By A.D. 1000 the pale of settlement had extended south of Barcelona into the Panadés and west to Segarra.

7. The Eleventh-Century Reversal: Causes and Consequences

The eleventh century, the most critical and significant of the Spanish middle ages, witnessed a change of sign in the peninsular balance of [47] power. After the death of al-Mansûr, the Caliphate of Córdoba, still the strongest power in Europe, collapsed in ruins in a matter of years. After a period of struggle and shifting power relations (the *fitna* or anarchy of 1008-1031) the unitary Islamic state was replaced by a shifting constellation of two dozen or so small states, ruled by the so-called Party Kings (*mulúk al- tawâ'if*).⁽⁵⁰⁾

The Christian countries were then able to take quick advantage of the fragmentation of Islamic power, by first establishing their suzerainty over the Party Kings by exacting tribute and then by renewing the conquest of Islamic territory. In the central and eastern regions the movement began in 1045, when García de Nájera, king of Navarre, captured Calahorra, starting a penetration of the Ebro Valley, and ended with the capture of Tortosa (1148) and Lérida (1149) by the count of Barcelona, Ramón Berenguer. In the west, significant advances were made by Alfonso VI of Castile, beginning with the seizure of Coria in 1079 and culminating in the capture of Toledo, the first major Islamic town to fall, in 1085. Here the Castilians were halted by the Almoravid invasion, but movement on the western coast continued, culminating in the capture of Santarem and Lisbon by Alfonso Henriques of Portugal in 1147.

The Taifa kings found themselves forced, in desperation, to call for help from the major power in the Magrib, the Almoravids, Berber camel nomads of the Sanhâja confederation who had extended their control over most of what is now Morocco during the 1080's. After the fall of Toledo, al-Mu'tamid of Seville in concert with other Taifa rulers invited Yûsuf ibn Tâshufin to cross the straits and save them from the Christian peril. In the late summer of 1086 the Almoravids met Alfonso VI's army at Sagrajas, near Badajoz, and inflicted a stunning defeat upon the Christians. Yûsuf returned to North Africa, but when the Andalusis were unable to follow up on their victory, he returned in force, determined to remove from power the elites that had been unable to mobilize Islamic forces. Between 1090 and 1102, when Valencia, which Rodrigo Diaz "El Cid" had ruled as an autonomous principality, was captured, the Almoravids established control of all al-Andalus, converting it into a province of their Magribi empire.

The Almoravids were able to stabilize the situation for only two decades, their decline becoming evident when Alfonso I of Aragon captured Zaragoza, in the heartland of the

middle Ebro Valley in 1118. Increasing pressure by Alfonso I and Alfonso VII of Castile exacerbated the [48] disaffection of the Andalusí masses with their Berber overlords, leading to a series of popular rebellions in 1144-1145 which ended Almoravid rule in Spain. Now, however, the Muslims were as fragmented as before, regional centers coalescing into a new constellation of seventeen Taifas. The cycle then repeated itself as the disarray of these kingdoms invited a new round of Christian victories (sieges of Córdoba and Almería, 1146-1147) which in turn led to the invasion of a new Berber dynasty, the Almohads, in 1171. Once again there was a great Muslim victory, when Abû Yûsuf Ya'qûb defeated Alfonso VIII of Castile in Alarcos, on the Córdoba-Toledo road in July 1195, and once again the battle wrought no change in the balance of power. Instead, the Christians were incited to regroup, to combine their forces, and finally to defeat the Almohads decisively at the Battle of Las Navas de Tolosa (1212), near Bailén in northern Andalusia, the same spot where Scipio had defeated the Carthaginians more than a millennium before.

The stage was now set for the final stage of the conquest. In the west, Alfonso IX of León conquered Badajoz in 1230, and Portuguese victories in the lower Guadiana basin and the Algarve followed. Under Ferdinand III the Castilians occupied the heartland of al-Andalus, taking Córdoba in 1236, Jaén in 1246, and Seville in 1248. In the east, James I of Aragón had captured the Balearic Islands in 1229 and Valencia in 1238. Rights to the conquest of Murcia had been the subject of three distinct negotiations between the crowns of Castile and Aragón (Pacts of Tudilén, 1157; Cazola, 1179; and Almizra, 1244). Pursuant to treaty arrangements, Ferdinand's son Alfonso, the future Alfonso X, garrisoned Murcia in 1243, completing the submission of Lorca, Mula, and Cartagena the following year. After a rebellion in 1264, Alfonso had to call upon his father-in-law James I of Aragón to subdue the territory a second time. The result was that the kingdom of Murcia, although remaining within the Crown of Castile, was to become culturally hybrid.

Our analysis of Andalusí and Spanish Christian society ends when the organization of the conquered territories by the Christians is completed and patterns of adjustment between conquerors and conquered have been established. At this point, in the last quarter of the thirteenth century, we can say that the situations and processes that lent tonality to Iberian history in the high middle ages were completed and, although confrontation with the Muslims of Granada continued until 1492 and substantial numbers of Muslims remained behind to continue [49] interacting with Christians, the dynamics of Spanish society of the later middle ages were the result of quite different social phenomena.

Yet many of the elements which came to characterize that Spanish society followed directly from the reversal of the eleventh century. In the first place, the economic system of the Islamic imperium was severely disrupted by nomadic invasions. Tunisia, for example, which had been the major entrepôt for Andalusí trade with the East was effectively cut off by the Hilâlî invasions. Iberian merchants now traded directly with Egypt, enduring increasing competition from Genoan and Pisan traders, who were the direct beneficiaries of the Tunisians' loss of intermediary status. But eastern trade routes had also been disrupted by Mongol and Turkish warriors, and the fragile economy of the Islamic world, dependent upon a complex system of long-distance trade routes for the supply of raw

materials and gold which underwrote the urban affluence of the Islamic high middle ages, was broken, initiating a long period of decline.⁽⁵¹⁾

The Berber invasions had paradoxical results. They made communication between Islamic Spain and the East more difficult and tended to draw al-Andalus in its waning years into a Magribi orbit. Heightened intolerance, the result of increasing Christian pressure on a now fully Islamized society, intensified the cultural isolation of al-Andalus (note the movement of Jews to the Islamic east or the Christian north, the practical disappearance of Christian minorities, and the rise of popular religious expressions with xenophobic overtones). Muslim intolerance was matched by the hardening of Christian attitudes,⁽⁵²⁾ as the movement of conquest gained force. Curiously, the general economic dislocation did not much affect the Iberian countries, as both Berber dynasties retained control of the Sudanese gold routes. The Almoravids and Almohads coined gold pieces of high value, which were copied by the Christians (e.g., the gold *morabetinos* of Alfonso VIII). In essence, this gold, when paid in tribute or captured in booty (the entire Almohad treasury was said to have been captured at Las Navas) fueled the Christian military effort.

At the same time as al-Andalus was moving into a markedly Moroccan cultural orbit, French influences made themselves felt in the Christian kingdoms. During the eleventh century the towns along the pilgrimage route to Santiago de Compostela became foci for the concentration and radiation of elements of French culture. As the Cluniac reform spread to [50] Christian Spain and the ecclesiastical hierarchy became permeated by French clerics, the cultural shift became obvious. Visigothic writing was replaced by the French style, inducing a break in traditional cultural links with the Visigothic-Mozarabic cultural tradition, as the codices written in the old hand became increasingly difficult to read. Two of the prime outward symbols of French influence were the substitution of the Mozarabic liturgy by the Roman rite and the diffusion of Romanesque art and architecture.⁽⁵³⁾

The eleventh century also witnessed an economic turn-around in the Christian kingdoms. Urbanization, fueled by Sudanese gold and the international trading currents flowing along the road to Santiago, as well as by the opening of the western Mediterranean to Christian shipping, was in evidence everywhere, and with it the diffusion of commercial methods and craft techniques by the settling of foreigners (Andalusi Jews and Frenchmen -- *francos*). The French also were agents of the diffusion of feudal institutions and styles that had hitherto been underdeveloped in Spain. In part, this movement of feudalization was encouraged by the growing mastery of iron techniques and subsequent improvements in the quality of Spanish arms and tack.⁽⁵⁴⁾ The popular cavalries of the early phases of the frontier warfare tended in the twelfth and thirteenth centuries to cede in importance to more professionalized units (the military orders).

We have seen, in this rapid overview of the chronology of events in Spain from the eighth through the thirteenth centuries, that neither of the societies discussed developed in isolation, either from each other or from the larger world system or regional subsystems in which they found themselves embedded. The specific contours produced by these molding influences are the subject of the analytical chapters that follow.

Notes for Chapter 1

1. This section is based upon Philip Grierson, "Commerce in the Dark Ages: A Critique of the Evidence," *Transactions of the Royal Historical Society*, 5th series, 9 (1959), 123-140; Denys Hay, *Europe: The Emergence of an Idea* (New York: Harper and Row, 1966); Archibald R. Lewis, *Naval Power and Trade in the Mediterranean, A.D. 500-1100* (Princeton: Princeton University Press, 1951); Lombard, *Espaces et réseaux du haut moyen âge*; and Andrew M. Watson, "Back to Gold and Silver," *The Economic History Review*, 2nd series, 20 (1967), 1-34.

2. On the Islamic world as a medium of diffusion, see Andrew M. Watson, "The Arab Agricultural Revolution and its Diffusion, 700-1100," *Journal of Economic History*, 34 (1974), 19-23; see also Arnold Toynbee's remarks on the cultural conductivity of nomadism, *A Study of History*, 10 vols. (London: Oxford University Press, 1934-1964), III: 391-394.

3. One of the few to stress the Roman heritage is Harold Livermore, *The Origins of Spain and Portugal* (London: George Allen and Unwin, 1971), p. 302, where he describes the Islamic Empire, in its early stages at least, as a neo-Roman system.

4. On Arabic response to Roman hydraulic monuments, see Lucie Bolens, "L'Eau et l'irrigation d'après les traités d'agronomie andalous au moyen-âge (XIe-XIIe siècles)," *Options Méditerranéennes*, 16 (December 1972), p. 77; Glick, *Irrigation and Society in Medieval Valencia*, p. 196; al-Himyarî, *La péninsule ibérique au moyen-âge*, ed. and trans. E. Lévi-Provençal (Leiden: E. J. Brill, 1938), p. 153; and Norman Smith, *Man and Water: A History of Hydro-Technology* (New York: Scribner's, 1975), p. 22. On the plundering of building stones by nomads, see ibn Khaldûn, *The Muqaddimah: An Introduction to History*, ed. and trans. Franz Rosenthal, 3 vols. (New York: Pantheon, 1958), I: 303.

5. al-Mâwardî, *Les statuts gouvernementaux*, trans. E. Fagnan (Algiers: Adolphe Jourdan, 1915), p. 382.

6. On the place of Central Asia and the "focality" of the Islamic world in the process of technological diffusion, see Joseph Needham, "Central Asia and the History of Science and Technology," *Journal of the Royal Central Asian Society*, 36 (1949), 135-145; and *idem*, *Science and Civilisation in China*, vol. I (Cambridge: Cambridge University Press, 1965), especially p. 220. On Islam as an "intermediate" society, see S. D. Goitein, *Studies in Islamic History and Institutions* (Leiden: E. J. Brill, 1966), pp. 59-60. On the cultural role of Persia, see Maurice Lombard *Espaces et réseaux du haut moyen âge*, p. 60, and *idem*, *L'Islam dans sa première grandeur* (Paris: Flammarion, 1971), p. 105.

7. Needham, "Central Asia." For a summary of the nature of diffusion from a geographical perspective, see Peter Gould, *Spatial Diffusion*, Commission on College Geography of the Association of American Geographers Resource Paper No. 4 (Washington, D.C., 1969); for an anthropological approach, see, for example, George M. Foster, *Culture and Conquest* (Chicago: Quadrangle, 1960), pp. 10-20.

8. Fernand Braudel, *The Mediterranean and the Mediterranean World in the Age of Philip II*, trans. Siân Reynolds, 2 vols. (New York: Harper and Row, 1972-1973), I: 282.

9. *Siete Partidas*, I.6.54; Gonzalo Menéndez Pidal, *Los caminos en la historia de España* (Madrid: Ediciones Cultura Hispánica, 1951), p. 57 (on the *sestaferia*, Friday, corvée in Asturias).

10. Albert C. Leighton, *Transport and Communication in Early Medieval Europe* (Newton Abbot: David and Charles, 1972), p. 57.

11. Jacinto Bosch Vilá, *Historia de Albarracín y su sierra*, Martin Almagro, ed. Vol. 11, *Albarracín musulmana* (Teruel: Instituto de Estudios Turolenses, 1959), p. 21 (see also *ibid.*, p. 34, on the replacement of roads by rivers as arteries of communication where no Roman roads survived); Manuel González García, *Salamanca: La repoblación y la ciudad en la baja edad media* (Salamanca: Centro de Estudios Salmantinos, 1973), p. 58; for Roman roads and bridges in a rural valley near León, see Justiniano Rodríguez Fernández, *El monasterio de Ardón* (León: Consejo Superior de Investigaciones Científicas, 1964), p. 177; on the use of Roman roads by both Muslims and Christians, see Sánchez-Albornoz, *Estampas de la vida en León hace mil años*, 3rd ed. (Madrid: Espasa-Calpe, 1934), p. 100 n. 88; p. 130 n. 4.

12. Lombard, *Espaces et réseaux du haut moyen âge*, p.81; José Angel Garcia de Cortázar, *El dominio del monasterio de San Millán de la Cogolla (siglos X a XIII)* (Salamanca: Universidad de Salamanca, 1969), pp. 151-152.

13. G. Menéndez Pidal, *Los caminos en la historia de España*, p. 41: "karro per que locum que sivit ambulare, si non abuerit kerrera directa, licentiam damus pergat per defesas per terras laboratas, per vineas, et limites frangere per via discurrente ad karro vel ad equis et mulas cargatas ambulare."

14. Richard W. Bulliet, *The Camel and the Wheel* (Cambridge, Mass.: Harvard University Press, 1975), p. 110. Bulliet makes no reference to climatic change; but if, as seems to have been the case especially in North Africa, the climate was becoming more arid from the third through the seventh century, such a shift would have reinforced the competitive edge of the camel over the cart in transport.

15. Sánchez-Albornoz, *Despoblación y repoblación del valle del Duero* (Buenos Aires: Instituto de Historia de España, 1966), p. 151 n. 57; Bulliet, *The Camel and the Wheel*, pp. 229-230.

16. S. D. Goitein, *A Mediterranean Society*, 2 vols. to date (Berkeley: University of California Press, 1967-), I: 275-276.

17. On structural features of medieval communications, see Lombard, *Espaces et réseaux du haut moyen âge*, p. 50; Braudel, *Mediterranean*, I: 357, 360, 363. On specific traveling times, see G. Menéndez Pidal, *Los caminos en la historia de España*, p. 45; E. Lévi-Provençal, *España musulmana hasta la caída del califato de Córdoba. Instituciones y vida social e intelectual*, trans. Emilio García Gómez (vol. 5 of *Historia de España* directed by Ramon Menéndez Pidal) (Madrid: Espasa-Calpe, 1957), p. 189.

18. G. Menéndez Pidal, *Los caminos en la historia de España*, pP. 46 (citing *Poema de mio Cid*, verses 1448-1609); Luis Vázquez de Parga, José M. Lacarra and Juan Uría Riu, *Las peregrinaciones a Santiago de Compostela*, 3 vols. (Madrid: Consejo Superior de Investigaciones Científicas, 1948-49), I: 61. The issue of the permeability of the frontier is also discussed in Chapter 2, section 6, below.
19. On the coordination of land and sea travel, see Goitein, *Studies in Islamic History*, p. 303; *idem*, *Mediterranean Society*, I: 276-277, 317. On the acceleration of pace during summer, see Braudel, *Mediterranean*, I: 256.
20. Goitein, *Studies in Islamic History*, pp. 301; also, *idem*, *Mediterranean Society*, I: 275.
21. Goitein, *Mediterranean Society*, I: 302, 318, 401; *idem*, *Letters of Medieval Jewish Traders* (Princeton: Princeton University Press, 1973), p. 55 n. 17; Mahmûd 'Ali Makkî, *Ensayo sobre las aportaciones orientales en la España musulmana y su influencia en la formación de la cultura hispano-árabe* (Madrid: Instituto de Estudios Islámicos, 1968), p. 24.
22. Goitein, *Studies in Islamic History*, p. 299; *Mediterranean Society*, I: 43, 60, 69, 275, 344.
23. See Lombard, *Espaces et réseaux du haut moyen âge*, p. 194.
24. E. A. Thompson, *The Goths in Spain* (Oxford: Clarendon Press, 1969), especially pp. 216-217.
25. Claudio Sánchez-Albornoz, "Repoblación del reino asturleonés. Proceso, dinámica y proyecciones," *Cuadernos de Historia de España*, 53-54 (1971), 406 n. 17.
26. Livermore, *Origins of Spain and Portugal*, p. 213.
27. A brief summary of what little is known of Visigothic economy is found in Jaime Vicens Vives, *An Economic History of Spain* (Princeton: Princeton University Press, 1969), pp. 83-92.
28. Ignacio Olagüe, *La revolución islámica en occidente* (Barcelona: Guadarrama, 1974), pp. 73-112, 224-282. One index of aridity in North Africa is the extension of *qanat* (*foggara*) systems in Tunisia from the seventh through ninth centuries; see Olagüe, *Revolución islámica*, p. 91, and Jaime Oliver Asín, *Historia del nombre "Madrid"* (Madrid: Consejo Superior de Investigaciones Científicas, 1959), pp. 359-367.
29. Leopoldo Torres Balbás, *Ciudades hispano-musulmanas*, Henri Terasse, ed., 2 vols. (Madrid: Ministerio de Asuntos Exteriores, n.d.), I: 27 n. 38, 32-34.
30. Manuel Díaz y Díaz, "Metales y minería en la época visigótica, a través de Isidoro de Sevilla," in *La minería hispana e iberoamericana*, 7 vols. (León: Catedra de San Isidoro, 1970), I: 261-274.

31. José Maria Lacarra, "Panorama de la historia urbana en la península ibérica desde el siglo V al X," in *Estudios de alta edad media española* (Valencia: Anubar, 1971), p. 52; Glick, *Irrigation and Society in Medieval Valencia*, p. 195.

32. Antonio Ubieto Arteta, *Ciclos económicos en la edad media española* (Valencia: Anubar, 1969), pp. 19-20; Diaz y Diaz, "Metales y minería," *passim*. On Isidore generally, see William D. Sharpe, "Isidore of Seville," *Dictionary of Scientific Biography* (hereafter cited DSB), 13 vols. to date (New York: Scribner's, 1970) 7: 27-28.

33. Toynbee, *Study of History*, III: 323; J. N. Hillgarth, "Visigothic Spain and Early Christian Ireland," *Proceedings of the Royal Irish Academy*, Section C, 62 (1962), 170.

34. See the full account of the received view by Claudio Sánchez-Albornoz, *Orígenes de la nación española. El reino de Asturias*, 3 vols. (Oviedo: Instituto de Estudios Asturianos, 1972-1975), I: 366-392, 413-458.

35. R. Dozy, *Recherches sur l'histoire et la littérature des arabes d'Espagne pendant le Moyen Age*, 2 vols. (Leiden: E. J. Brill, 1881), I: especially 36-38; and Olagüe, *Revolución islámica en occidente*, p. 322 (invasion of Chaldeans with horses, from *Habbakuk*) and 334 (three and a half years of duration of conquest, from *Daniel*).

36. On Count Julian, see Livermore, *Origins of Spain and Portugal*, p. 281. According to Vallvé, "Algunos problemas de la invasión musulmana," p. 365, Julian was also a Goth, the governor of Cádiz. Sánchez-Albornoz, holding to the generally accepted view, follows ibn Khaldûn in supposing Julian to have been a Christian Berber, a *fidelis* of Witiza and emir of the Gûmara tribe; "Frente a unas páginas erróneas sobre la conquista de España por los musulmanes," *Cuadernos de Historia de España*, 49-50 (1969), 306-307 n. 43. On Tarif, see Vallvé, "Algunos problemas," p. 365; *tarîfa* in Arabic means point, utmost point (an obvious allusion to its location on the straits of Gibraltar). On Târiq, *ibid.*, p. 356. Olagüe, *Revolución islámica en occidente*, pp. 274-275, believes Târiq to have been a Goth, governor (in name at least) of Tingitania. For fanciful views of Târiq and Julian as Jews, see references in Norman Roth, "The Jews and the Muslim Conquest of Spain," *Jewish Social Studies*, 38 (1976), 146, 148.

37. Vallvé, "Algunos problemas de la invasión musulmana," p. 367. The basis for Vallvé's critique, that the Arab chroniclers took place names of Cádiz Bay from classical sources and applied them mistakenly to the Bay of Algeciras, is convincing and must be better answered than by Sánchez-Albornoz's hysterical reply, cited in n.36, above.

38. See Olagüe, *Revolución islámica en occidente*, pp. 22-25: 10,000 war horses would have consumed 400,000 liters of water daily. If the number is reasonably accurate, it would have made sense to let the enemy advance rather than attempt a ride to Seville in mid-July.

39. The material on the curve of conversion comes from conversations with Richard W. Bulliet and from his book *Conversion to Islam in the Medieval Period: An Essay in Quantitative History*, which I read in manuscript with his generous permission. For his method of analysis, see his chapter "Conversion to Islam and the Emergence of a Muslim Society in

Iran," in A. Atmore and N. Levtzion, eds., *Conversion to Islam: A Comparative Study of Islamization* (in press). Bulliet's conversion curves are based on statistical analysis of names of Islamic jurists compiled in biographical dictionaries, or *tabaqât*. He first derives a "curve of Muslim names," based on the tendency of converts to Islam to adopt for their children names readily identifiable as Muslim, drawn from a restricted list of such names (Muhammad, Ahmad, 'Ali, al-Hasan, al-Husain). Results from this sample can be checked against a smaller sample of ancestors with non-Muslim, non-Arab names (e.g., an Andalusí *faqih* of the tenth century with a grandfather or great-grandfather named Lûb -- Lope). This sample yields a "curve of actual conversion," and there is a two-generation offset (about seventy-five years) between the two curves. Figures 1 and 7 show curves of actual conversion. Bulliet's sample for al-Andalus is too small to be statistically significant; yet it corresponds precisely to curves for other Islamic societies (Figure 7). In geographical diffusion literature, the logistic curve is the normal curve of innovation adoption; see Gould, *Spatial Diffusion*, pp. 19-21.

40. *Muqaddimah*, I: 327.

41. *Revolución islámica en occidente*, pp. 251-253.

42. Makkî, *Aportaciones orientales*, p. 53 (al-Samh's letter) and 41 (*baladiyyûn*); veterans were also called *al-'arab al-aqdamûn* -- "Old Arabs."

43. *Ibid.*, pp. 170-172, listing five pro-'Abbâsid uprisings between 755 and 781.

44. A. Barbero and M. Vigil, *Sobre los orígenes sociales de la reconquista* (Barcelona:Ariel, 1974), p. 82.

45. *Ibid.*, p. 48 n. 72: *ut nolint esse Romani*. Diaz y Diaz, "Metales y minería," p.267, notes that Isidore omitted Cantabria from his account of mineral resources, perhaps because he did not consider that region part of Hispania.

46. Olagüe, *Revolución islámica en occidente*, p. 286; Sánchez-Albornoz, *Despoblación y repoblación del valle del Duero*, pp. 180-183.

47. Sánchez-Albornoz, *Despoblación y repoblación del valle del Duero*, p. 125. Ibn al-Qutiyya mentions a barren zone lying between Christian and Islamic territory in the ninth century (*ibid.*, p. 251).

48. José Angel Garcia de Cortázar, *La época medieval* (Historia de España Alfaguara, 11) (Madrid: Alianza, 1973), p. 130. Note that the conversion of the Basques, once thrown into contact with an intrusive Christian population, would also follow a logistic curve.

49. Sánchez-Albornoz, *Despoblación y repoblación del valle del Duero*, pp. 53 n. 23, 215.

50. The social dynamics of this breakdown and realignment of forces is discussed in Chapter 4 and the changing pattern of political organization in Chapter 6.

51. Lombard, *L'Islam*, p. 202; Goitein, *Studies in Islamic History*, p. 310; and *idem*, *Mediterranean Society*, I: 32.

52. The symmetry is noted by Juan Verner, *Los musulmanes españoles* (Barcelona: Sayma, 1961), p. 59.

53. See the discussion of stylistic influences in Chapter 9. For summaries of eleventh-century changes, see J. M. Lacarra, "La repoblación de las ciudades en el camino de Santiago: Su trascendencia social, cultural y económica," in Vázquez de Parga *et al.*, *Peregrinaciones a Santiago*, I: 465; and Ubieto, *Ciclos económicos*, p. 123.

54. García de Cortázar, *Epoca medieval*, p. 159.

AGRICULTURE, SETTLEMENT, AND THE MOVING FRONTIER

1. Two Cultures, Two Ecologies

[51] The basis of our comparative analysis of Islamic and Christian societies in the Iberian peninsula of the high middle ages rests on the perception that the two societies during the period when the frontier between them was stabilized (until approximately the mid-eleventh century) were ecologically differentiated. Thus our understanding of the agricultural economies and patterns of resource utilization pursued in each sector follows from a macroscopic view of human ecological adjustments, viewed in terms of regional geographic variation. This approach, which stresses cultural factors preeminently, seems more valid than any simplistic division of the peninsula into physically defined zones, the most usual being "wet" and "dry" Spain. For, whatever variable one might choose to define an ecosystemic frontier (vegetation cover, temperature, or precipitation), the frontier will differ in each case. It is, rather, the culture itself, through its patterns of settlement, that defines what frontier or which ecological limits are meaningful.

This is not to ignore significant climatological distinctions. It is well to bear in mind, for example, that the number of rain days per year typically diminishes as one moves from north to south along the Mediterranean coast. The pattern in the central and western regions is different: as much rain falls in the *campiña* of Andalusia as falls in Galicia, both well in excess of the figure for the Castilian meseta. The mean temperature generally rises from north to south. But when the two indices are conjoined in an attempt to delimit pluvius and arid zones, each attempt has produced different cartographic patterns.⁽¹⁾

Our understanding of the traditional agrarian economics presently to be described is based upon three interrelated assumptions:

(1) The basic unit of analysis is the agroecosystem. All processes comprising an agricultural regime (whether agronomic, hydrologic, technological, or economic) constitute an interdependent system, each element of which is linked systemically to all the others.[52]

(2) Following Peter H. Freeman, we assume that "From an ecological perspective, traditional farming techniques are almost without exception well suited to environmental potentials. They could be viewed as ecologically 'harmonious' with the important proviso that human and domestic animal populations have not exceeded the carrying capacity (under traditional practices) of the environment."⁽²⁾ Such a formulation provides a standard against which agricultural change can be analyzed and assessed.

(3) When movements of culturally distinctive populations are involved, as they were throughout the course of the high middle ages, we assume that such migratory groups will tend to fill ecological niches which are most nearly in accord with their cultural traditions. We define "niche" broadly and with a cultural connotation: it is a zone with discrete ecological characteristics which a cultural group recognizes as familiar. In this view, when a human group fills an ecological niche an element of choice is implied. Anthropologists have recognized that migrating groups tend to move into areas "where their particular ecology is feasible."⁽³⁾

Further, this choice is conditioned by traditional perceptions of the environment, and by institutions and technologies developed for the pursuit of specific styles of agriculture.

When a group attempts to expand its old niche (for example, by the introduction of a new technique or crop) or when it, through conquest or migration, changes niches, then its success in the new situation will be a function of its capacity to adapt. A variety of cultural strategies are available: learning new techniques; attempting to continue an old style in an ecologically inappropriate situation (if a crop is valued highly enough, a low yield may be preferable to abandoning the crop completely); or selecting only those elements of a traditional system which will survive in new conditions.

In early medieval Iberia there were a number of significant ecological frontiers, separating zones in which the components of agroecosystems (dry farming, irrigation, herding, arboriculture) either differed or were conjoined in a different balance.

One frontier was delimited by the southern slopes of the Cantabrian-Pyrenean mountain system, separating a mountain herding and forest ecology from a sector characterized by cereal dry-farming, vineyards, supplementary irrigation, and local herding (e.g., the Duero Valley, the Plain of Vich). Another is that described by the northern limits of olive [53] cultivation, which corresponded more or less to the stabilized political frontier between Islamic and Christian zones to A.D. 1000. After the opening of the Tajo Valley to Christian settlement in the wake of the conquest of Toledo (1085), the Tajo constituted a boundary between an agrarian system in which cereal crops were dominant, lying to the north, and a more typical Mediterranean landscape -- grapevines, olive trees, irrigated "oases" -- lying to the south, where cereal grains played a relatively minor role.

In the following sections, the dynamics of agricultural growth and change in Islamic and Christian Spain will be analyzed, as will the transitions necessitated by the breaching of ecological frontiers.

2. Landscape Change and Environmental Perception

When Baltasar Gracián observed that the Spain of his day was "just as God created her, without a single improvement made by her inhabitants, except for the *small amount* done by the Romans,"⁽⁴⁾ he was expressing a perception of the immobility and stagnation of Spanish society of the seventeenth century. But in fact Gracián was mistaken. The cultural landscape of the Spain of his day was largely created in the high middle ages, as the result of the Islamic conquest and of the early modalities of Christian settlement. In the south,

although the Muslims built on a Roman base, the landscape was substantially orientalized; while in the north the mountaineers, as they moved onto the plains, became acculturated, through a variety of agents, to Mediterranean patterns of agriculture and settlement.

All movements of organized colonization involve a prior image in the mind of the settler of where he is going. What he actually does when he arrives depends to a great extent on how well his image, which is conditioned positively or negatively by his old environment, meets the requirements of the new ecological reality.

Muslims and Christians alike perceived the Iberian environment as richly endowed with natural resources; at least, this is the view that predominates in the literary traditions of both peoples. That the opposite was more nearly true was not fully appreciated, in a programmatic way, until the late nineteenth century, although there were earlier demurrs.⁽⁵⁾

The outstanding image associated with Arabic literary perceptions of the peninsula is that of the Koranic paradise. The historian al-Râzî noted [54] the country's natural endowments (among which he includes numerous rivers which allowed widespread irrigation, a salubrious climate, good wines, and great mineral wealth) had led certain authors to say that "Spain resembled God's paradise." Although such images were widely applied, they appear in exemplary fashion in descriptions of Valencia: its waters, the airy, diaphanous, and healthy nature of its atmosphere -- clear reflections throughout this literature, I believe, of Hippocratean notions that ideal urban locations were dependent upon the hydrographic characteristics of the region and the pattern of prevailing winds. The semblance of highly developed irrigated sectors of the Valencian huerta surrounding the city led more than one poet to describe the city as paradise.⁽⁶⁾

The notion, repeated in the Koran, of Paradise as a garden (*al-janna*, "The Garden") is symbolized in the form of Andalusí gardens, a few of which survive physically and some of which are described in literary sources. The form of these gardens, quadripartite rectangles with fruit trees arranged in rows parallel to an axial watercourse, was of direct Persian (though ultimately, perhaps, of Roman) inspiration. Such an arrangement is apparent in an eleventh-century description of the *Hair al-Zajjâli*, a renowned Cordoban garden, and is confirmed by the pattern of gardens, such as the Generalife of Granada, surviving from a later era. The symbolic value of the formal Islamic garden was as an earthly anticipation of paradise. In this sense, its contents of water, shade trees, and flowers were dictated by a generalized reaction to the desert environment, the traditional environment of Arabs, one that is dominated, of course, by aridity and conditioned by associations of the desert with fear and evil.⁽⁷⁾ It is striking, indeed, that desert images, a traditional theme in Arabic poetry, are almost completely lacking in Andalusí poetry, except as a device to introduce, for example, the paradisiacal, watery freshness of a place like Valencia,⁽⁸⁾ and this in spite of the fact that wide stretches of the southern peninsula (e.g., the Almerian hinterland) already resembled the face of the moon, having been deforested by the Romans.

Besides the image of the Koranic Paradise, there was a second theme characteristic of the Andalusí perception of their environment: a consistent stream of comparisons with eastern Islamic landscapes. Places were valued not only for their distinctive characteristics

but for their associations with other regions of the Islamic world, one of whose elements resembled that of a given Andalusí city or, more typically even, when a constellation of elements presented an environment perceived as identical [55] to an eastern one. Partly this phenomenon has to do with poetic conceits linked to specific places (such as the likening of any river to the Nile), and partly to the prestige with which the Islamic East was regarded; but, more significantly, such allusions were the result of specific patterns of settlement in the peninsula by groups of eastern origin.

The climatic unity of the Mediterranean made possible the wholesale transfer of landscapes from one sector of the basin to others. Migrants, encountering a familiar ecological context, found that they were able to establish themselves in new territories without substantially changing their settlement patterns, agricultural regimes, or diet. To such colonists, in Fernand Braudel's apt characterization, "their journey simply meant finding in a new place the same trees and plants, the same food on the table that they had known in their homeland; it meant living under the same sky, watching the same familiar seasons." It was natural that the old associations would be remembered. Thus al-Himyarî likened al-Andalus to Syria in fertility and "the purity of its air," to the Yemen for its even, temperate climate, to India for its aromatic plants, to China for its mineral richness, and to Aden for its seashore economy.⁽⁹⁾

Moreover, the process was self-reinforcing: because climatic conditions made landscape transference possible, such transference was encouraged as a matter of policy. The troops led by Balj ibn Bishr were deliberately settled in habitats resembling their place of origin.⁽¹⁰⁾

Thus the Egyptians were settled in Murcia, ostensibly because they were accustomed to irrigation agriculture, and later al-Himyarî reported that "Murcia is found on a great river which irrigates its whole territory in the manner of the Nile of Egypt."⁽¹¹⁾ The obvious, but unwitting hyperbole, in comparing the Segura to the Nile is a reflection of the tradition to which we have been referring.

Most striking of all was the extensive Syrianization of the landscape that took place throughout the eighth century, first, through the settlement of Syrian contingents (*junds*) in such places as Seville and Valencia; second, through the wholesale importation of Syrian styles by the cadres of Umayyad clients who flocked to the peninsula after 756; third, by the deliberate policy of Umayyad emirs, 'Abd al-Rahmân I in particular. The introduction of Syrian agricultural systems, of hydraulic machinery used in Syria, of Syrian building techniques and decorative motifs, the deliberate importation of vegetation native to Syria – these were among the many discrete elements that contributed to the Syrianization of Andalusí towns [56] and countryside. Here, we are concerned only with perceptions: that these constellations of elements were perceived of as being distinctively Syrian. Seville (Ishbîliya), settled by Syrian *junds*, was customarily and affectionately referred to by Arab writers and poets of east and west alike as Hims al-Andalus, after the Syrian town of that name. In a similar vein, ibn Sa'îd, a thirteenth-century writer from Alcalá la Real (Granada), remarked that no eastern cities reminded him of home except for Damascus and Hama, a central Syrian town, and al-Shaqundî called Granada the Damascus of al-Andalus. Not surprisingly, the Damascus scenes in the film "Lawrence of Arabia" were

filmed in Seville, a city generally acknowledged to resemble traditional Damascus more than Damascus itself.⁽¹²⁾

The Isidorean tradition of the *laus hispaniae* was continued faithfully by Christian writers and poets. Here we analyze the perception of the environment of Old Castile as portrayed in the *Poema de Fernán González* and in the related version in the *Primera Crónica General*.⁽¹³⁾ In the first place, and similar to the concern of the Arabic commentators, primary emphasis is placed upon the temperate quality of the climate:

Tierra es muy tenprada syn grandes calenturas
Non faze en yvyerno destenpradas fryuras
Non es tierra en mundo que aya tales pasturas
arboles pora fruta syquier de mil naturas.
(Stanza 145)

(It is a very temperate land without great heat; there are no extreme cold spells in winter. There is no land in the world that has such pastures, fruit trees of at least one thousand kinds.)

This is clearly the perception of an optimum environment for a pastoral, mountain economy, an appreciation of which follows in the next stanza:

Sobre todas las tierras me'or es la Montanna
de vacas e ovejas non a tierra tamanna
tantos ha y de puercos que es fuera fazanna
syrven se muchas tierras de las cosas d'Espanna.
(Stanza 146)

(Of all the lands the best is the mountain; there is no land equal to it for cows and sheep; there are so many hogs there it is a famous feat; many lands are served by Spanish products.)

[57] The positive valuation of the Old Castilian summer, which is in fact too arid to permit a three-course crop rotation, supports the strong identification with a mountain agroecosystem. These two stanzas are not Isidorean per se, but rather an affirmation of the Castilians' continuing identification with the traditional north Castilian ecology even after substantial shift to wheat-growing had occurred. There is no doubt that these two stanzas are cast within a Castilian frame of reference, although that famous line asserting that "Of all Spain, Castile is the best" does not occur until stanza 156; the intervening verses mix generalities drawn from the standard catalogue of the *laus hispaniae* genre, although highlighting certain products of mountain economies (e.g., beeswax, in the same stanza -- no. 147 -- which praises olive oil, a product not native to Old Castile and, in no. 148, wild game and river fish, which are typical of Castile).

The version in the *Primera Crónica General* begins with a Koranic echo, that Spain is like "el parayso de Dios," and stresses themes found in both the Isidorean and Arabic traditions, relevant mainly to the peninsula as a whole. Particular stress is laid upon (1) the theme of

abundant water; the five principal rivers (Ebro, Duero, Tajo, Guadalquivir, and Guadiana); the good quality of river water ("el humor de los rios"); and the abundance of subsoil water -- "there never lack wells for each place that has need"; (2) the great variety and abundance of agricultural products, including wine, bread, honey, beeswax, sugar, silk, and saffron (Andalusi products); and olive oil (the *Crónica*, more faithful to the Isidorean tradition, says *olio*, while the *Poema* uses the Arabism *azeyte*, which was imported into Old Castile); (3) a great stress, standard in the genre in both Arabic and Christian versions, on the mineral wealth of the peninsula.

These stock perceptions, although similar, must have related to different economic situations. Castilians before the twelfth or thirteenth centuries could well conceive of their resources as abundant because, given the low population density of the region and the underdevelopment of urban economies, not much demand was exercised on the resource base. Thus, for the Castilians, the roster of minerals, a reminiscence of Roman mining exploitation, represented more a promise than a reality (with the possible exception of iron).

For the Muslims, mineral wealth had real meaning because these resources were utilized and the resource base, through the eleventh century at least, was adequate to the demand of urban artisan industry and the [58] export trade. Only in the case of climatic perceptions do cultural differences play a substantial role in ecological assessment. Both groups perceived as temperate climates which are not now so perceived, the Arabs on the practical level because of their reliance on irrigation, which lessened their fear of aridity and provided a contrast to the expectations of a culture with traditions rooted in the desert; the Castilians because as mountaineers they had not yet broadened their agricultural base to the point where the climatic conditions traditionally valued became dysfunctional. In Castile, perceptions of agricultural impoverishment came later. Only in the fourteenth century, when the dynamic forces of the economy were located on the plains, not the mountains, when the agricultural economy had become substantially diversified, and when population pressure began to make excessive demands, did Castilians begin to perceive their environment more realistically. Only then were complaints raised in the Cortes about the sterility and poverty of the soil and the shortage, not abundance, of livestock and other foods.⁽¹⁴⁾

3. The Frontier as an Image and as a Creator of Landscape

Previously, I have intimated that in the Iberian peninsula during the high middle ages the borders or frontiers between Christians and Muslims were ecological in nature or, stated another way, they had clear ecological ramifications which not only colored perceptions of the frontier but which also necessitated ecological adjustments when those frontiers were breached, first by conquest, then by permanent settlement. Following in the spirit of the previous section, we shall first note differing perceptions of the frontier and then examine the relationship between these perceptions and the way in which the frontier districts were organized.

For the Christians the dominant image of the frontier was a desert -- *locus desertus* -- a place that was uninhabited, due to the conditions following from the Islamic conquest, and

uninhabitable given prevailing conditions of insecurity and threat of incursion. To a certain extent the apposite Arabic term for a wasteland, *mafâza*, played a similar role, but lacked the connotations of permanence and the symbolic weight that it held for the Christians. To give expression to a perceived division of the peninsula into two sectors Arab geographers created an imaginary mountain chain, based in part on fact and in part on perceptions that demanded a palpable barrier where none existed. This chain began in the [59] east, somewhere between Barcelona and Tarragona (in effect placing the Catalan counties that had come under Frankish influence to the north of the Pyrenees), whence it proceeded southward towards Tortosa and then veered west and continued on a general east-west trajectory until it reached the Atlantic midway between the mouths of the Duero and Tajo.⁽¹⁵⁾ One group of Arab geographers, possibly representing a later tradition and whose outstanding representative was al-Idrisî, placed the eastern terminus of this system at Medinaceli, whence it continued due west to the ocean. This chain, called al-Sharrat (that is, the Sierra), was a more realistic portrayal of the Central Cordillera (which in reality proceeds in a markedly southwesterly direction from Medinaceli). Its massive, rectilinear depiction on Idrisî's map is an idealization of a social reality: the stabilization of the western frontier on the Duero line. In the east, Idrisî still portrayed Barcelona as lying to the north of the Pyrenees.⁽¹⁶⁾

The interplay between frontiers perceived as significant and those which actually acquire geopolitical reality is complex. Through the tenth century the Duero River played the role of a geopolitical barrier and was so perceived by the rulers of the Asturo-Leonese kingdom. For similar reasons, that of establishing an easily identifiable line of defense, the Central Cordillera had both geopolitical and symbolic significance for the Muslims. The Iberic system, on the other hand, which in the later centuries virtually determined the division between Castilian and Aragonese spheres of influence and therefore had enormous geopolitical significance, during this period lay mostly within al-Andalus and was not considered the most important factor differentiating eastern al-Andalus (Sharq al-Andalus) from the west. The tenth-century geographer, al-Râzî, for example, considered the direction of river flow and of prevailing winds as the most valid criteria for dividing the peninsula in two parts.⁽¹⁷⁾

In both Islamic and Christian territories, frontier zones were, by their very nature, organized on a distinctive basis, inevitably entailing defensive structures embedded in a looser system of state control than was possible in the hinterlands. The Umayyads did not impose upon the frontier zones the full provincial organization into *kuras* but rather delimited three defensive frontier regions known as *thugûr* (singular, *thagr*), modeled after border organization in the eastern empire and generally translated "marches."

In earlier centuries the *thagr* was simply an empty zone separating Muslims from Christians, defended by a line of castles, and lacking a [60] full civil administration. Typically they were connected loosely with the emirate, and strong dynasties such as the famous Beni Qasî, descended from Goths and intermarried with the Navarrese nobility, were able to rule in virtual independence from Córdoba -- in this case, in the Upper March (*thagr al-aqsa*) around Tudela. During the Caliphate only two marches were accorded significance: the Upper, headquartered in Zaragoza, which controlled the region from Huesca and Tudela in the west to Lérida and Balaguer in the east, and the Middle March

(*thagr al-awsat*), delineated by a line of castles along the Tajo (to the *south* of the Sierra, al-Sharrat, it will be noted), dependent politically upon Toledo, but organized militarily from Medinaceli.⁽¹⁸⁾

The Upper March, whose population grew more dense in the course of the tenth century, particularly along the border with the Catalan counties, in effect became further differentiated into the old Upper March defending the heartland of the Ebro Valley and an Eastern March (*thagr al-sharqī*) whose defensive orientation was apposite to the Catalan military frontier.⁽¹⁹⁾ The Upper March, due to its dense population, acquired greater political vitality than the other frontier regions of al-Andalus and, concomitantly, socio-cultural distinctiveness which persisted even past the time of Islamic domination: Aragonese Moriscos emigrating to North Africa in the sixteenth century still distinguished themselves as *tagarinos*, men of the *thagr*, a confirmation of the cultural cohesiveness of the area.

A similar situation prevailed in the frontier areas of the Catalan counties and much has been written about the so-called Spanish March – Marca Hispanica – a term that until quite recently was generally and mistakenly applied to the entire region that eventually became Catalonia. In fact, as Maravall demonstrates, those areas referred to as *marca* were not organized parts of the Frankish kingdom south of the Pyrenees, as once thought. In reality, the term connoted just the opposite: a lack of organization, a zone of imprecise changing boundaries open to enemy incursions and defended by castles and other military installations, much like their Islamic counterparts.⁽²⁰⁾

Indeed the *marca*, as Maravall concludes, was not a term applying to any one area, but to a variety of frontier regions, a term analogous to the Castilian usage of *extremo*, the edge of settlement, wherever that happened to be. In Catalan usage, the two terms *marca* and *extremus* were intermixed -- *extremum in ipsa marchia*, *in ipsa marcha extrema* -- and in 1017 the monks of San Cugat, at that time an outpost near the frontier, [61] spoke of the need to build defensive installations "in barren marches and in solitary places, against the pagans."⁽²¹⁾

Similar concepts of the frontier prevailed in the west, where the frontier of Galicia was referred to as *extremos Galletiae fines* and where Sancho II was known as king of Castile *et in omnibus finibus eius* (in all its ends), where *fines* has the sense of *marca*.⁽²²⁾ The land south of the Duero was called Extremadura -- which in the tenth century designated the region just south of the Duero encompassing Zamora and Simancas, but which later, as the frontier advanced southward, came to acquire its present geographical connotation, the lands to the south of Salamanca along the Portuguese border, including Cáceres, Mérida, and Badajoz, all well within the Andalusi hinterland during the high middle ages.

The defensive nature of frontier life can be vividly appreciated in surviving place-names that reflect military structures erected on both sides of the line. By mapping these names, one can get a sense of the frontier in motion as Christian lines advanced, and as Muslims built new lines of defense. In toponymic maps, this process is manifested in the marked regression of Latin-derived military place-names and their substitution with Arabic-derived names.

In areas of continuous Christian settlement, where large numbers of Goths took refuge from the conquering Muslims one finds names derived from the Gothic *wardja* ("centinel"), such as Guardia and La Guardia in Galicia, Asturias, and particularly in Catalonia on the southern frontier of the marchlands. Names derived from *castrum*, "fort," and its diminutive *castellum* are also found in relative abundance in the northern kingdoms -- the name of Castile itself being the most obvious example -- and these names become less dense as one moves southward to encounter names derived from the Arabic *qasr*, "castle," and *qal'at*, "fortress" -- for example, Alcázar, Alcalá, Calatayud ("Ayyub's fort"), Calatrava, names which occur in peak density along the northern line of Islamic defenses as in the provinces of Lisbon and Zaragoza.

Not all military emplacements were as heavily fortified as castles. The defensive strategy in medieval warfare placed great reliance on watchtowers which served as advanced positions to warn against enemy incursions, particularly in lightly settled areas on the frontier. Names derived from *turrem*, "tower," abound in the north and even increase toward the south, for as the Christians grew in military power they placed less reliance on castles and more on building a military communications [62] network. Names from the corresponding Arabic term, *burj*, concentrate below the stabilized frontier and represent the apposite phenomenon on the Islamic side. Two functionally related Arabisms, *almenara* and *atalaya*, both meaning watchtower, are found on both sides of the line: *atalaya*, in fact, is a good example of an Arabic military term, representing an initially superior technology which was adopted at an early date in the Christian kingdoms.

In the eleventh century, with the invasion of Almoravids, the Muslims introduced a new form of defensive installation: the *râbita* or frontier headquarters of religious ascetics who served in the holy war against the infidel, giving rise to place names such as La Rábida (in Castilian; Ràpita, in Catalan), as well as to others expressed in Arabic with a borrowed Latinism *munastîr* (from monastery, as in Almonacid in the province of Castellon).

Finally, one finds the name *frontera* itself, attached to various sites which at one time or another found themselves on the boundary, from Aldeaseca de la Frontera in the province of Salamanca, to the many towns so named in Andalusia (Jerez, Aguilar, Vejer), representing the advances of the thirteenth century.⁽²³⁾

Pierre Bonnassie has noted that Christians and Muslims living in close proximity to one another in the northeast of the peninsula had different perceptions of the same "frontier." That part of al-Andalus stretching from the north of Lérida to southern Pallars had been until the tenth century a region of relatively low population, not well integrated into the Islamic state. The region became substantively Islamized only in the tenth and eleventh centuries, but even then there was no hard line of political demarcation as connoted by the modern sense of frontier. Indeed, Christian and Islamic settlements intermingled to a certain degree and the Muslims considered their own those areas in which Muslims were settled.

For the Christians, on the other hand, their settlements in the same regions were regarded as tenuous outposts of civilization in an environment highly colored by insecurity and charged with fear, a place (as described by some monks from San Cugat in 1022) of "great

terror and trembling" and to which terms like "solitary" and "deserted" were consistently applied. The very end of this territory -- the *marca ultima* -- was regarded as a no-man's-land and those Christians who dwelt there were held by their coreligionists of the hinterland to be perverse and depraved men, doubtless because they benefited from trade with the Muslims.⁽²⁴⁾

[63] The same perceptions of fear, solitude, and desertion are even more pronounced in many references to the Duero Valley in the ninth and tenth centuries. In future sections there will be ample discussion of various aspects of Claudio Sánchez-Albornoz's theory that, through warfare and the conscious policy of Alfonso I, who was said to have transported the Christian population of the valley en masse to the northern mountains, the Duero Valley had become *wholly* depopulated in the wake of the Islamic invasion, an extreme literalist interpretation of the admittedly reiterated descriptions of places within the valley as barren, deserted, and uncultivated. Beyond whatever value the term *locus desertus* may have as a description of reality, we must however also agree with Ramón Menéndez Pidal that it had a "rhetorical" value, or rather what I think is more accurately characterizable as a perception of a human landscape whose density of settlement was extremely low.⁽²⁵⁾

Indeed the basic element in the perception of the frontier by Castilians and Leonese of the ninth and tenth centuries was the awareness of the paucity of their own population in comparison with the great numbers of their Muslim adversaries. Such perceptions emerge regularly in accounts of early battles with the Muslims: for example, the tens of thousands of Muslim troops said in the Chronicle of Alfonso III to have been defeated by Pelayo's tiny band at Covadonga. In the *Poema de Fernán González* the same point is made in the assertion that "thirty wolves" (that is, the Castilians) can kill 50,000 sheep (the Muslims).⁽²⁶⁾

A much quoted line from the same poem (stanza 217) describes the Castilians of the tenth century as "a few men gathered together in a small land" (*eran en poca tierra pocos omnes juntados*). This line occurs in some recensions of the poem in the opposite sense, *muchos hombres juntados*, which Sánchez-Albornoz used to support the picture of a Castile expanding through the dynamism of an exploding population.⁽²⁷⁾ The first reading, that stressing low numbers, is supported by the corresponding section in the *Crónica General*, but moreover is more in line with what I believe was a general perception of the insignificance of Christian numbers compared to the Islamic colossus.

Uninhabited territory was regarded as fearsome not only because of its susceptibility to attack by the enemy, but because those living in such places, and their farm animals, were subject to attack by wild beasts. Thus when Alfonso VI placed the Segovia region under the control of the bishopric of Toledo, he noted that this newly settled and cultivated region [64] had previously been the domain of bears and boars, the latter an animal much feared by peasants.⁽²⁸⁾ There were, to be sure, uninhabited areas within Islamic territory as well. The countryside between Almanzora and Almería was described as sandy and sterile, and the plain extending from Almería to Cape Gata as a true desert.⁽²⁹⁾ Yet the presence of such inhospitable country did not lead Andalusí poets to utilize the traditional images of desert environment found in the pre-Islamic poetic tradition, as one might expect; rather, the convention was to depict the entire peninsula as a vast garden, as we have noted. In general,

the sterile areas of al-Andalus (*mafâza*) described in Arabic geographical literature were not frontier areas, with some exceptions, such as al-Râzî's characterization as *mafâza* of the area stretching between Albarracín and Toledo, which in the tenth century, while not densely populated, was also not directly on the frontier. Ibn Idharî associates areas devastated by Berbers during the *fitna* as having fallen prey to wolves; Abû Ishâq of Elvira, not a frontier region in the eleventh century, mentions wolves (claiming that they were less dangerous than *faqîhs*-- the legal jurisprudential elite); ibn Muqânâ mentions deserted areas (*mafâwiz*) around Alcabideche where wild boars roamed untrammelled.⁽³⁰⁾ A *mafâza* was, therefore, a term describing a particular kind of environment, wherever it chanced to occur, whereas the *locus desertus* was inevitably associated with the frontier and the process of conquest and resettlement.

Nevertheless, in the late eleventh century there are signs that, as a result of the shift in the balance of power in the favor of the Christians, perceptions of the frontier were changing too. The Christians, growing constantly in strength and feelings of security after the death of al-Mansûr, felt their fear of the frontier subside accordingly. It was only at this time, for example, that kings began to grant charters of title to lands not yet conquered.⁽³¹⁾ A corresponding change, with the opposite sign, is in evidence on the Islamic side, especially on the Middle March, the pressure point which felt the full brunt of the Castilian thrust. Thus the Muslim governor of Calatrava expressed horror when Alfonso VI devastated the region and cut down all the trees.⁽³²⁾ Dominique Urvoy has suggested that in areas where contact with Christian Spain was frequent, particularly the Middle and Upper Marches in the period following the collapse of the Caliphate, the pressure emanating from the north caused a generalized need for the revitalization of religious life among Muslims. In the Middle March this pressure was felt and sublimated in two ways. First, it [65] produced heterodox figures such as al-Talamanqî (from Talamanca), who was accused of Khârijism, and ibn Shaqqal-Layl, a student of eastern Sufi mysticism. Second, Urvoy also associates the particularly rich development of Islamic law (*fiqh*) in the Middle March with its strategic location, implying that another reaction to pressure was a retreat into legal formalism and rigidity.⁽³³⁾

In this section my concern has been to indicate some of the ways in which political and cultural confrontation were shaped by the presence of the frontier -- many frontiers -- first, a stabilized one, then a boundary in more or less constant flux and motion; and then to show that the frontier was not only a real entity, but a set of perceptions which influenced attitudes and action on both sides. Further aspects of the frontier phenomenon, such as its social repercussions, its economic ramifications, and its role in cultural diffusion, will be dealt with in appropriate sections below.

4. Dynamics of Settlement and Growth: al-Andalus

Comparison of the ecological adjustments made by Muslims and Christians in the high middle ages is made difficult by the disparity of available evidence. Generally, data on settlement, land-use patterns, and the habits and customs of everyday rural society is much more detailed for Christian Spain than for al-Andalus. On the other hand, the Arabs spawned a well-defined agronomic and geographical literature which provides information,

particularly regarding crop dispersal and the acclimization of new crops, totally lacking for the northern kingdoms.

Nevertheless, a comparison is valid. Both people exploited irrigation agriculture, dry-farming, arboriculture, and herding. Not only the balance among the four agrarian subsectors, but the scale of agriculture generally and its relation to the rest of the economy, differed substantially from south to north, in accord with ecological realities and preferences and in response to differing socio-economic factors. Yet certain analogous processes took place on both sides of the line: clearance of land at the expense of forest, the diffusion of new crops and techniques, the use of stream water for irrigation, the persistence of Roman practices.

Roman Spain, it is well to bear in mind, was agriculturally distinguished for the large-scale production of cereal grains, olives, and grapes, of which the former two were typically grown in large units to increase the profitability of these crops for export. Irrigation was practiced, and the [66] continuity of its practice in certain zones, such as the Valencian huerta, from Roman times to the present is proved. Nevertheless, the agricultural economy was geared to dry-farming of high-profit export crops on latifundia, and irrigated vegetable gardens played no major role in this system. Nor does stockherding appear to have played a significant economic role, although the Celtiberian tribes of the mountainous hinterland practiced transhumant herding of sheep and goats, and cattle were raised in the lush lowland meadows of the Guadalquivir basin.⁽³⁴⁾

In contrast to this picture, the pattern of agriculture that emerged in al-Andalus over a four-hundred-year period included:

- (1) the steadily increasing predominance of irrigation agriculture and consequently of crops dependent upon artificial water supply;
- (2) the initial association of this kind of agriculture with foci of Arab settlement in lowland river basins;
- (3) the relegation of the other agricultural sectors (dry-farming, arboriculture, herding) mainly to non-Arab peoples;
- (4) an increase, over Roman times, in the economic significance of sheepherding; and
- (5) a corollary of all of these—a progressive and general retreat of wheat cultivation, a movement to which many signs point but for which proof is inferential.

The balance among agrarian sectors in Islamic Spain was related to, and its contours partially determined by, ethnic cleavages along ecological lines, whereby the Arabs reserved for themselves and their Neo-Muslim or Christian tenants the fertile lowlands as areas for the development of hydraulic agriculture; the Berbers maintained a pastoral and arboricultural economy in the mountains; and cereal dry-farming was continued by the indigenous population, whether Christian or Islamized. The division of agricultural sectors along ethnic lines, clearly delineated at first but tending to become blurred over time, only

serves to underscore the fact that the agricultural regime typified in the Andalusi aeronomical treatises of the eleventh and twelfth centuries was a phenomenon explicable not merely in economic terms alone but as the result of complex processes of acculturation and cultural diffusion. The association of irrigation with Arabs, the increasing tendency to rely on this kind of agriculture to support the expanding urban economies of the great Andalusi cities, must indeed, given the numerical insignificance of Arabs in the population, lead to the conclusion that a vast movement of acculturation [67] had taken place, and that people whose ancestors had been dry-farmers became irrigators through the learning of new techniques and, perhaps more importantly, by acquiring through emulation of the dominant group's life-styles, different dietary and culinary tastes, supportive of a shift to irrigation agriculture.

The problem is further complicated by the fact that the ecological cleavages may not have been as neat as once supposed. It is generally agreed that Berbers occupied three foci of settlement, encompassing much of al-Andalus and nearly all of what is now Portugal: (1) the southern mountains from the Sierra Nevada and the Serranía de Ronda in the east, to the Niebla-Algarve region in the west, with a very dense nucleus to the north of Córdoba in the Sierra Morena; (2) the northwest, including Mérida, the Tajo and Mondego valleys, with centers in Talavera, Coría, Medellín, Astorga, and Coimbra, communicating with another nucleus in the upper Duero region; and (3) the entire mountainous region of the Middle and Upper Marches, and particularly the mountainous hinterland of Valencia, including the whole of the present province of Teruel.⁽³⁵⁾ Recent studies have demonstrated that the Berber impact was even greater. Pierre Guichard has demonstrated that much of the Valencian lowlands, all of which were irrigated and which were previously thought to have been densely settled by Arabs, in fact included numerous Berber settlements, a conclusion supported by the configurations highly suggestive of Berber tribal settlement in the huertas of Gandia and Murcia. Then Jaime Oliver Asín, in a dramatic essay on Castilian place names, has recently demonstrated the permeation of zones well to the north of the line of stabilized settlement by Berber nuclei, probably Christian and Latin-speaking, but with similar forms of social and agrarian organization as their Muslim relations.⁽³⁶⁾

Not only was Berber settlement even more widespread than previously imagined, but the Berbers appear to have occupied niches once believed wholly organized according to Arab norms. This is not really surprising because, although North African Berbers were adept olive cultivators and practiced transhumant herding, they also practiced irrigation, both by stream flow, in the small upland valleys in the Rif and Atlas mountains, in lowland plains (for example, around Marrakesh), and in the desert oases of the Sahara.

Arab settlement was densest in the valleys of the great rivers, the Guadalquivir (which was not, in fact, a region where gravity-flow irrigation [68] in canals was much practiced) and the Ebro, where canal irrigation was characteristic. Other Arabic nuclei settled in regions later associated with verdant irrigated huertas (the jund of Damascus in the Granada region, that of Egypt in Murcia) but their effect upon the agricultural regime is not clear. The indigenous population, who had mainly been involved in dry-farming and arboriculture doubtless continued in their former pursuits, those who became tenants of Arab landlords being in a position to learn new agrarian technologies.

THE MUSLIMS AND IRRIGATION

Irrigation agriculture and hydraulic technology are themes that reappear throughout this book. This is due not only to their undoubted significance in the economics of both societies but also to the fact that, as Jacques Berque wisely recognized in his study of Berber irrigation systems in the High Atlas, water distribution arrangements are so complex and idiosyncratic that they can be treated as historical documents and provide a rich source of information concerning the structure of society in general and the processes of ecological adjustment and technological diffusion specifically.⁽³⁷⁾ Furthermore, the role of irrigation in the economies of semi-arid states is so important that some authors have portrayed it as the central organizing feature of the society. Thus Karl Wittfogel portrays al-Andalus as "a genuine hydraulic society, ruled despotically by appointed officials and taxed by agromanageial methods of acquisition."⁽³⁸⁾ In Wittfogel's conception, hydraulic societies are polities in which, through control of water sources, elites are able to exercise despotic control, through a bureaucracy which arises partly in response to the managerial and maintenance requirements dictated by a large-scale, hydraulically based agricultural economy and through manipulation of labor by various forms of coercion. In this context, he associates the polity of al-Andalus of the Emirate and Caliphate with those of Mesopotamia, Egypt, China, and other ancient societies where flood control and irrigation on large rivers were a major concern of the state. Medieval Spain is of further interest to Wittfogel as an example of a society that "crosses the institutional divide" from hydraulic to non-hydraulic society when, as a result of the Reconquest, the Christians, to Wittfogel the representatives of feudal norms of governance, conquered al-Andalus and fell heir to the physical structures of the irrigation system without having, he implies, the necessary institutional structures to perpetuate the system.

[69] Leaving aside for the next section the hydraulic implications of the Christian takeover of formerly Muslim-held territory, we find Wittfogel's views of Islamic Spain open to serious question, although they do raise issues of considerable importance. In the first place, the heartland of the Emirate and Caliphate was the Guadalquivir Valley, where large-scale irrigation from rivers, in the manner of the Tigris or the Nile, was not practiced and where state-controlled flood prevention measures were not needed. The sources record interest only in urban water supply projects, such as the canalization of water from the Sierra Morena to supply the Mosque of Córdoba, built at the behest of the caliph 'Abd al-Rahmân III.⁽³⁹⁾ Systems that more closely approximated the eastern "despotic" model, such as those of Murcia, Valencia, and particularly Zaragoza and the Ebro Valley, were all in areas of peripheral interest in the Caliphate, the latter frequently escaping its control completely. Second, if any institutional divide was crossed with regard to the organization of hydraulic agriculture, it was crossed not with the loss of al-Andalus to the Christians but more likely with the dissolution of the Caliphate into the Party Kingdoms of the eleventh century. Indeed, recent historians of Andalusí agriculture have seen in the break-up of the Caliphate a positive spur to agricultural innovation and growth in response to a political structure that favored the development of regional economies.⁽⁴⁰⁾

The plausibility of this conclusion, which is inferential, depends on how one interprets the issues raised by Wittfogel: if al-Andalus was a hydraulic society in the classical sense then the dissolution of the Caliphate could have had only a deleterious effect on the hydraulic

structure itself, inasmuch as that structure must have been partially the creation of the state and needed the state's support to continue. If, as seems more plausible, there was no overall investment in or administration of irrigation by the Umayyad rulers, then it is difficult to see how the dissolution of the Caliphate would have directly affected irrigation one way or the other.

Both of these arguments in fact tend to disregard a more basic point: that irrigation systems influence the power structure not through administrative or labor requirements but, in Robert Hunt's characterization, through the production of local surpluses which are then converted into tokens of power and prestige in the extralocal world.⁽⁴¹⁾ The question is not who controls the water-source but who gets the benefit of agricultural surpluses produced as a result of irrigation-intensive agriculture. In the Islamic world the process of conquest and colonization jolted stagnant local economies, put money into circulation again, and caused a price [70] rise that provided a real spur to the development of craft trades and thus to urbanization. The beneficiaries of this development, the urban merchant class, were soon able to purchase land in the surrounding countryside and thus to establish a real dominance of the towns over the countryside.⁽⁴²⁾ This, and not the workings of a despotic bureaucracy run from the palace at Córdoba, was the process responsible for the creation of the typical urban-huerta landscape, a town surrounded by a belt of fields irrigated either from gravity-flow canals or by means of wells tapped by animal-driven hydraulic wheels. Once set in motion by economic growth and reinforced by technological innovations, the process was self-perpetuating unless interrupted by a major economic catastrophe. Al-Andalus was able to avoid the decay which began to afflict other areas of the Islamic world as a result of the disruptions of the eleventh century, because the flow of Sudanese gold was never cut off. Although the Umayyad superstructure diverted a great proportion of the wealth generated by agricultural surpluses to the building of monumental structures, there is no reason to believe that a comparable amount was not diverted in the eleventh century by tribute paid by the Taifa kings to the Christians. Therefore, I do not see any real break in the economic development of town/huerta complexes but rather a steadily growing process which in the eleventh century may well have been stimulated by the development of regional economies, to the extent that places like Valencia, Granada, and Zaragoza, which had been very small towns during the Caliphate, now came to emulate Seville, by a process completely analogous to that whereby the latter city had grown.

The irrigation systems of al-Andalus were of two kinds, although the huertas resultant from their development were quite similar both in structure and in economic function. First, there were systems where individual fields were served by canals bearing water delivered by gravity flow either from a river or from a spring. Second, there were other huertas where individual fields were served by wells, with the water raised to the height of the fields by an animal-driven hydraulic wheel. In addition, fields could be watered by current-driven wheels, lifting water from a river or a canal, combining the two modes.

These irrigation systems were characterized not only by the specific technologies utilized but also by the manner in which water was distributed to the users. These customary arrangements lend to each system a distinctive stamp and permit an analysis of their origins and organizing [71] principles. I must stress the inferential nature of the relevant data: there is little documentation surviving from the Islamic period and therefore our view of the

irrigation arrangements followed must be developed on the basis of the rich documentation surviving from the centuries after Christians had taken over the systems, preserving Islamic customs, and from comparative study of traditional irrigation systems in contemporary Islamic countries .⁽⁴³⁾

The distribution of water among the eight canals of the Valencian huerta is a particularly useful example because the underlying principles of the distribution arrangements are well documented and quite easily associated with a specific Islamic model. The river, now called by its Roman name the Turia, but in Islamic times known as the Wâd al-Abyad (Guadalaviar, "White River"), was considered to be divided into successive stages, each stage representing the point of derivation of one main canal which drew all the water at that stage, or of two canals, dividing the water among them. At each stage the river was considered to hold twenty-four units of water. The twelve-base system, several other examples of which are noted below, is standard in many areas of the Islamic world and is clearly related to the hours of the day. A paradigmatic system, so structured, would envision a river divided into 168 units (representing seven days and nights, or 144 if a day of rest was customary).⁽⁴⁴⁾ The units were not, however, expressed in hours, but as simple proportions of a whole. Thus, in times of abundance, each canal drew water from the river according to the capacity of the canal; in times of drought, the canals would take water in turn, for a commensurate number of hours or a proportional equivalent. The same was true of individual irrigators (and herein lies the genius of the Valencia system): when the canal ran full, each irrigator could open his gate as he pleased, but when water was scarce, a turn was instituted; each irrigator, in turn, drew enough water to serve his needs (this style of irrigation was by submersion of the field, typically to a standard depth of an ankle). But he could not draw water again until every other irrigator in the system had his turn. Thus a relatively equal distribution was ensured, both in times of abundance and of scarcity, and no measurements of time or orifice of delivery were needed.

It is clear that this system is a close approximation of that of the Ghûta, or irrigated farm belt, of Damascus, where the Barada River is divided into stages where the river is held to be divisible into twenty-four *qîrâts*.⁽⁴⁵⁾ [72] The Damascus system, studied in the 1930's, does not reduce as easily as the Valencian to a division involving a one-week turn, but the organizing principle is clear nonetheless.

Yet if the river of Valencia was organized according to Syrian principles the process of diffusion raises some issues that are difficult to resolve. If the system was transplanted by elements of the Syrian contingents who entered al-Andalus with Balj ibn Bishr in the 740's, then one must posit an extraordinarily rapid process whereby nomadic troops from Arabia had settled in the 630's and 640's in irrigated areas around Damascus, learned the traditional distributional system (which was already old, judging by the permutations in the twelve-base structure which appear in the Caliph Hisham's division of the Barada in 742).⁽⁴⁶⁾ and transmitted it to their grandsons, who although practicing irrigators, volunteered to fight in the west with Balj. This scenario seems improbable, the more so since it now appears that many of the early settlers of the Valencian huerta were Berbers -- the Favara canal, second largest in the huerta, for example, derives its name from the Hawwâra Berbers.⁽⁴⁷⁾ A similar pattern is observable to the south in the huerta of Gandia, where the Vernisa River is apportioned by a twelve-base system, whose complex

permutations make it impossible to figure out the original rationale (once this was forgotten, as by Christian times it had been everywhere, infinite permutations were possible by doubling, halving, or otherwise changing the units). Moreover, the secondary canals tend to have names compounded with Beni, suggesting a typical Berber settlement pattern with individual tribal units controlling an entire canal.⁽⁴⁸⁾

It is more likely that the Syrian model was imposed upon a population of Berber irrigators by an Umayyad governor, particularly during the early years of the Emirate, when the Syrianization of the landscape was a generalized phenomenon. This might well have occurred in the first quarter of the ninth century, when the Valencian region was ruled by 'Abd Allâh, a cousin of the Emir al-Hakam I, called al-Balansî ("The Valencian").

A probable factor in the willingness of Berbers to learn eastern styles of water distribution was the lack of large rivers in North Africa; therefore, when they arrived in Spain, where river irrigation was possible on a scale that demanded a more complex kind of organization, the imposition of eastern norms was a logical and practical solution. Ya'qûbî, a late ninth-century eastern author, describes Valencia as a region inhabited by Berber tribes who did not recognize Umayyad authority and who had a [73] river called the Shukr (the Júcar).⁽⁴⁹⁾ The irrigation systems of the Júcar were organized along generally "Syrian" lines.

The markedly public character of water in the Valencian-Syrian system is an inheritance from Roman law, as are the notions of allocation of water to individual farms in proportion to the area watered and the idea of controlling a limited supply of water by assigning more specific rights, organizing turns, and so forth. Other features of Andalusí irrigation systems, such as the responsibility of the individual irrigator for the maintenance of that portion of the main canal that abuts his property, were common to all Mediterranean irrigation systems and are found in the water law of Mesopotamia and other ancient societies. Regulations were enforced by elected or appointed officials who are known only by their names, surviving in Christian practice of the later middle ages—the *sâhib al-sâqiya*, "master of the canal," possibly an urban official deriving his power from the *qâdî*, and entrusted with the enforcement of traditional distribution arrangements and the overseeing of canal and diversion-dam maintenance. Curiously, two of these officials became kings of Valencia during the Taifa period, a testimony to the power and prestige of the office and to the predominant role of irrigation agriculture in the regional economy.⁽⁵⁰⁾

Farther south, in the oasis-like communities of Elche, Novelda, and Alicante, irrigation water was also distributed in canals, but the distribution arrangements were markedly different. Early in this century the French geographer Jean Brunhes noted that water distribution arrangements in southeastern Spain seemed to group into two families. In places where water was more or less abundant -- the river systems of Valencia, Gandia, Murcia -- water rights inhered in title to the land and were distributed proportionally according to the system described above. But in Elche and other areas where the water supply was relatively limited (the sources were typically springs, rather than rivers), water rights tended to be privatized, alienable from land, and allocation was by fixed-time units which could be bought and sold.⁽⁵¹⁾ Brunhes correctly identified a pattern in the distribution of irrigation systems according to climatic and hydrological factors. But he did not note the cultural dimensions of the phenomenon, for these oasis systems have a South

Arabian profile. Thus the water measurement units in Elche are clearly identifiable with those of Yemeni systems, where the units represent time values ranging from portions of an hour to a full day.

[74] The Yemeni model seems also to have prevailed in the oases of the Sahara, a fact which contributes to a picture of Berbers learning Yemeni customs from Arab immigrants and then, in turn, transferring them to the Iberian peninsula. Not only the measurement units, but the techniques of measurement (for example, the sinking clock), as well as the officials who presided over the measurement and sale of water, manifest a pattern of diffusion from South Arabia across the Saharan chain of oases and into Islamic Spain. These patterns are clear in the systems that have been studied comparatively. Similar studies are needed of other Islam-derived Spanish systems, such as those of Murcia, Granada, and the Ebro Valley, all of which have analogous but highly idiosyncratic features.

The diffusion of specific models of irrigation arrangements with clear precedents in the eastern Islamic world forms the context in which the introduction of new crops is fully comprehensible. Yet the systems discussed do not form a complete picture of Islamic irrigation practices. Much land came under irrigation, owing to the development, not of surface water sources, but of ground water, on the basis of the diffusion of lifting devices, originally of Persian inspiration, throughout the Islamic world.

THE NORIA REVOLUTION

The introduction of the *noria* in any district has always had revolutionary consequences upon agricultural productivity. If introduced into an area where river irrigation has been practiced (for example, Ptolemaic Egypt), it lessens the dependence of gravity-flow canals on fluctuations in the level of the river (the Nile, in the case of Egypt) by using nongearred, water-driven wheels to raise the water.⁽⁵²⁾ The geared wheel, moved by harnessing animal traction to it, may have an even more dramatic economic effect. Since it is relatively inexpensive to build and simple to maintain, the *noria* enabled the development of entire *huertas*, intensively irrigated on the basis of individually owned smallholds. The diffusion of both kinds of wheels had the effect of increasing agricultural production, allowing for a greater density of population, and of providing agricultural surpluses with which to underwrite urbanization.

In al-Andalus, water-driven wheels were found in conjunction with canal systems in Murcia, where the mammoth wheel at La Ñora was driven by the current of the Aljufía canal, and most typically in Toledo, [75] described by al-Idrisi (twelfth century) as having around it gardens interlaced with canals on which were established wheels for irrigation, and Córdoba, where al-Shaḡundī (thirteenth century) described 5,000 *norias* (probably including both lifting and milling devices) on the Guadalquivir.⁽⁵³⁾ The extensive aeronomical literature of eleventh- and twelfth-century Andalusí writers strongly accentuates the role of irrigation agriculture to the detriment of dry-farming techniques. But the irrigation described is not fluvial but from wells from which the water is lifted by a *noria* with a chain of pots and deposited directly into a channel or into a holding basin. Indeed, these writers came largely from Seville and Toledo, two cities to which the cultural

center of gravity had shifted after the fall of the Caliphate and where Valencian-style irrigation was not practiced.

In the ancient Mediterranean world, generally only winter crops were grown, with each field yielding one harvest every other year. The Arabs introduced a variety of new crops of Indian origin (of which the Andalusí agronomists were fully aware -- al-Tignarî of Granada makes reference to "Indian agriculture").⁽⁵⁴⁾ Since these crops required heat, they were grown in the summer. Thus a rotation of crops became the norm, and irrigated fields yielded as many as four harvests yearly. The far greater number of annual plowings required by the new crop succession and the resultant water loss tended to make Muslim irrigators meticulous in their regard for the water-bearing capacities of each kind of soil. More kinds of soil were used than had been the custom in antiquity, and the agronomical handbooks indicate that each soil type should be fully exploited.⁽⁵⁵⁾ Ibn Bassâl, whose treatise was based completely on practical experience, distinguished between ten classes of soil, assigning to each a different life-sustaining capability, according to the season of the year. He was insistent that fallow be plowed four times between January and May and, in certain cases (for example, cotton, when planted in the thick soils of the Mediterranean littoral), he recommended as many as ten plowings.⁽⁵⁶⁾

The agronomists believed that irrigation was necessary, along with fertilizer, as an improver of soil and, according to prevailing natural philosophical notions, as a regulator of soil temperature. Reflecting the highly refined practical techniques of eastern garden agriculture, they stressed the necessity of cultivating in such a way as to preserve the maximum amount of moisture in the soil. In irrigated fields, this involved a carefully planned field system of raised ridges and furrows, oriented in such a way as to make the best use of the slope of the land. In some cases, this [76] involved "correcting the land" so that the water would run equally through all the furrows, so that submersion could be achieved with maximum benefit to all plants without letting the water stagnate. These notions were standard throughout the Islamic world wherever irrigation was practiced and gave rise to distinctive patterns of rectilinear fields approaching a square shape, containing low irrigation levees to regulate the flow of water, and with ridges and furrows typically arranged in the form of a comb. The purpose of the comb, one of a number of furrowing patterns used, was to slow the velocity of flow on fields whose slope exceeded one degree or more, thus enabling a farmer to irrigate without terracing his land. This was the common form of furrowing for vegetable crops, with serpentine furrows used for row crops, and its diffusion has been traced from Central Asia to southern Spain.⁽⁵⁷⁾

THE ARAB "GREEN REVOLUTION"

The introduction and acclimatization of new crops, a powerful component of the economic growth of al-Andalus, followed the same pattern of diffusion as the irrigation systems and techniques used to grow them. Of the plants brought by the Arabs to the peninsula (those whose Arabic names passed into the Spanish languages are noted in Table I), the seeds of many must have been brought by anonymous cultivators. Yet more formal methods of introduction are recorded. 'Abd al-Rahmân I, whose nostalgia for the Syrian landscape has been mentioned before, was personally responsible for the introduction of several species, including the date palm. A variety of pomegranate was introduced from Damascus by the chief judge of Córdoba, Mu'âwiya b. Sâlih, who personally presented the plant to the Emir. From the palace at Córdoba a Jordanian soldier named Safar took a cutting and planted it on his estate in the Málaga region. This species, called *safrî* after the soldier, subsequently became widely diffused. Early in the ninth century the poet al-Ghazâl of Jaén returned from a mission to the east with the doñegal fig, which became one of the four or five staple fig varieties in the country. The full description of the poet's *modus operandi* is symptomatic of the way cultural elements were diffused in that cosmopolitan world:

"The doñegal (*dunaqâl*) fig was introduced by al-Ghazâl when he went from Córdoba to Constantinople as an envoy. He saw that fig there and admired it. It was forbidden to take anything from Constantinople. [77] He took the green figs and put them with his books that he had wrapped up, after he had unfolded the strings and wrapped them again. When he made his departure, he was searched and no sign was found of it. When he arrived in Córdoba he removed the plant from the middle of the twine, planted it, and cared for it. When it bore fruit, he went with the fig to the lord of Córdoba and it amazed him. He told him about his ruse in procuring it. The lord thanked him for his deed and asked him about its name. Al-Ghazâl replied: 'I do not know what its name is except that when the one who picks it gives some of it to someone he says "Dûnahu qawli" which means "Oh my lord, look!" and so the Commander of the Faithful named it Dunaqâl.'"

Such details are all too infrequent in the literature, but represent what must have been a common pattern.⁽⁵⁸⁾

Newly introduced plants were frequently acclimatized in royal gardens, first in that of the Umayyads in Córdoba and, in the eleventh century, in the royal gardens of Toledo (where the agronomists ibn Bassâl and ibn Wâfid were both employed) and Almería. Many of the new plants were either tropical or semi-tropical varieties that required irrigation, or were temperate species that could only be stabilized in a semi-arid environment by irrigation. Therefore the Andalusí agronomists paid particular [78] attention to the water requirements of each species. Ibn al-'Awwâm was precise in stipulating the water needs of mountainous plants transplanted in the lowlands.⁽⁵⁹⁾

Chief among the newly introduced irrigated crops were sugar cane, which in al-Andalus was watered every four to eight days, and rice, which had to be continually submerged. Cotton was cultivated at least from the end of the eleventh century and was irrigated, according to ibn Bassâl, every two weeks from the time it sprouted until August 1. The

Andalusis were self-sufficient in cotton and exported it, according to al-Himyarî, to Ifriqiya and as far south as Sijlmâsa.⁽⁶⁰⁾ Oranges and other citrus plants were also irrigated, as were many fruit trees and dry-farming crops which do not need to be watered but which produce greater yields if they are.

The introduction of new crops, combined with extension and intensification of irrigation, gave rise to a complex and varied agricultural system, whereby a greater variety of soil types were put to efficient use; where fields that had been yielding one crop yearly at most prior to the Islamic invasion were now capable of yielding three or more crops, in rotation; and where agricultural production responded to the demands of an increasingly sophisticated and cosmopolitan urban population by providing the towns with a variety of products unknown in northern Europe.

ARBORICULTURE

Irrigated field crops were complemented by the standard Mediterranean vine and tree crops, the most important of which were olives, the fig, and grapes. Although these three crops were generally considered to occupy the same ecological niche -- hill country and unirrigated plateaux -- fig trees were frequently used as borders on irrigated fields and grapes were often irrigated, when practicable, to increase yields.⁽⁶¹⁾

We have mentioned the olive before in connection with the frontier: the pale of Muslim settlement did not extend beyond the northward limits of olive cultivation. The Arabs had not introduced the olive (although they may have imported new trees from North Africa to supplant those which perished in the drought of the eighth century); the plant had been a staple of Hispano-Roman agriculture. But the stress that Islamic culture placed upon it, seen, for example, in the almost exclusive use of olive oil for cooking, to the exclusion of animal fats, left a lasting mark: in [79] contemporary Spanish usage the tree has a Romance name -- *olivo* -- while the fruit and oil are known by Arabisms -- *aceituna*, *aceite*, from *al-zaitûna*, *al-zait*.

The best-known olive-growing region in al-Andalus was the area to the west of Seville called al-Sharaf -- Aljarafe -- "situated upon a high plateau of red earth, of an area approximating forty miles square, which can be traversed walking always in the shade of olive and fig trees." Aljarafe oil was highly esteemed and was exported to the east (to Alexandria, according to al-Shaqundî). At the time of the conquest of Seville (1248), Julio González calculates the number of olive trees in the province at more than two and a half million, producing five million kilos of olives. By the end of the century, however, tithes on wheat were more lucrative than the olive tithe, although both were considerable. The distribution of land use of the Aljarafe today (30 percent in olives, 23 percent in wheat, 35 percent in forest, and 12 percent divided among other crops) is probably close in profile to what it was at the end of the thirteenth century, no doubt representing some shift in emphasis toward wheat-growing after the Christian conquest. Other olive-bearing areas of the peninsula may not have matched the Aljarafe in density, but were well known for olive cultivation: Idrisî referred to the Lérida-Mequinenza region as the *lqlîm al-zaitûn* -- region of the olives.⁽⁶²⁾

Although figs may not have had the economic importance of olives, they afford an excellent example of the intensification of agriculture in Islamic Spain, manifest in the dazzling variety of the fruit available to consumers. In the tenth-century Calendar of Córdoba, the Latin *figus* (fig) translated the Arabic *shajar* "trees" (the specific word for fig is *tin*), indicating that the fig was so numerous that it became, by antonomasia, *the* tree. From the standpoint of production for the export market, Málaga was the most important fig center, the city being surrounded on all sides by figs of the Rayyo (*rayyī*, also referred to as *mālaqi*, Malagan) variety, "which is the best class of figs and the largest, with the most delicious pulp and the sweetest taste." Malagan figs were exported by Muslim and Christian traders and sold in Baghdad (according to al-Shaḡundī) and as far away as India and China, where they were valued for their taste and their ability to preserve it over the full year's travel occupied in their transport. In the Sierra Morena a wide variety of figs was grown, including the *qūtiya* (Gothic), *sha'arī* (hairy), and doñegal. [80] The fig was also of interest to the agronomists: al-Hijāri reported that in the Garden of the Noria in Toledo there was grown a kind of fig tree whose fruit was half green and half white.⁽⁶³⁾

Contrary to what might be expected given the Koranic prohibition of wine-drinking, the spread of Islam not only failed to blot out the grapevine, but in fact, owing to the inventiveness of Islamic horticulture, the number of varieties was even increased. In spite of indications in the Repartimiento literature that grapes were not widely grown in certain areas of southern Spain where vineyards later flourished -- Seville, for example -- the Arabic sources indicate that grape-growing and even wineproduction were widespread. Although we can assume that wine production was to a certain degree attuned to the needs of the Christian and Jewish communities (there was a state-operated wine market in the Secunda district of Córdoba, where many Christians lived, in the time of al-Hakam I), there was a tremendous market for grapes, raisins, and wine among Muslims as well. This is the result of Iraqi, not Christian, influence. Abū Hanīfa's dictum declaring the legality of drinking datewine was extended by Andalusī jurists to include all wines. Widespread wine-drinking became current during the wave of Iraqi influence in the reign of 'Abd al-Rahmān II and was said to have been introduced by Ziryāb, the famous singer and arbiter of style. Al-Shaḡundī reports that in Málaga the vineyards stretched on uninterruptedly, and that in Ubeda (*not* a place associated with Christian minorities) grapes abounded to the point where there was no market in them. Another well-known Andalusī grape was the *qanbanī* grape of the Cordoban *campiña*, perhaps the most productive dry-farming area in the country.⁽⁶⁴⁾

THE PROBLEM OF WHEAT

I stress that wheat-growing in al-Andalus is a problematical question because it assumes a variety of processes, none of which are, as yet, well documented or well understood: first, the extent to which areas that had been wheat-producing before the Islamic conquest became abandoned (e.g., in frontier buffer zones) as a result of the conquest; second, the extent to which remaining wheat production suffered diminution from the migration of Christian wheat-growers to the northern kingdoms; third, the extent to which Neo-Muslim wheat-growers may have mi'grated to the towns, abandoning their farms; fourth, the acculturation of [81] dry-farming Mozarabs and Neo-Muslims to the irrigated style of agriculture, which did not place as high a value on wheat.

It is difficult to state with certitude exactly what varieties of cereal grains were grown in al-Andalus. It is generally thought that the Arabs introduced hard wheat (*Triticum durum*) to Europe, and that this is associated with the wheat called *darmaq*, which passed into medieval Castilian as *adârgama*. Millet, which was the lower-class staple, was replaced by sorghum (Arabic *dhura*, yielding medieval Castilian *aldora*), imported from the Sudan, no doubt by Berbers. Sorghum played in al-Andalus the same social and nutritional role as that played by rye in Christian Spain; however, rye was also cultivated by the Muslims, who called it by its Romance name, *shantiyya* (see Table 2). There can be little doubt that there were powerful climatic justifications for the replacement of soft wheat and rye by hard wheat and sorghum, respectively. Hard wheat was resistant to heat and drought, and sorghum, "though it required some moisture in the early part of its growing season . . . could mature in a summer that was very hot and dry." The conduciveness of the dry Iberian air to long-term storage of cereals was much remarked by medieval geographical writers. According to Yâqût, the wheat of Toledo could be stored in silos for a century. As a result of more efficient storage [82] capability, seasonal and drought-year shortages could be better handled and the price of grain stabilized.⁽⁶⁵⁾

Nevertheless, soft wheat varieties must have persisted in many parts of the country -- those varieties known in Andalusî Arabic by Romance-derived names -- as well as rye, cultivated in traditional form by Christian or Neo-Muslim dry-farmers.

Many regions were mentioned as being famous for the quality of their wheat: the campiña (*qanbaniyya*) of Córdoba; various places with the name Fahs (meaning plain) -- Fahs al-Ballût, to the north of Córdoba and Fahs Qâmara, near Colmenar; the plain of Cartagena, and that of Sangonera, near Lorca; the region between Cintra and Lisbon in the far west. After the conquest of Valencia, Muslims typically abandoned the irrigated areas, but remained to cultivate wheat in such places as Viver and Jérica.⁽⁶⁶⁾ Yet in spite of the impressive list of places renowned for the quality of their wheat, al-Andalus had a chronic wheat deficit which, for the reasons stated, must have grown greater with the passage of time. The Andalusîs imported grain from North Africa from the ninth century on and, after the Christian recuperation of the Duero Valley, from León (notably during the reign of Ferdinand II, 1157-1188).⁽⁶⁷⁾ In this context, ibn Khaldûn's comments on wheat are revealing. He noted, for example, that nomadic Arabs were habituated to importing wheat "from distant places" owing to their great mobility, a statement, which, it seems to me, can be read as indicative of a low value assigned to wheat in the traditional hierarchy of Arab food tastes. Indeed, elsewhere ibn Khaldûn remarks that among Arab nomads milk fills the role occupied by wheat among sedentary peoples. Indeed, the two primary dietary characteristics of urban dwellers, according to ibn Khaldûn, is much (too much) meat and fine wheat. He attributes the good health of Andalusîs to their spartan diet of sorghum and olive oil.⁽⁶⁸⁾ There are other indications that wheat was not highly valued: in the version of ibn Bassâl's treatise on agriculture published by Millás Vallicrosa there is no discussion of cereals at all. We know that ibn Bassâl wrote about cereals (ibn al-'Awwâm quotes him), yet in the irrigated milieu of the Taifa capitals the man who copied ibn Bassâl's treatise may simply have found the sections on cereals irrelevant. On the other hand, ibn Bassâl's prescriptions on rice-growing are included in full detail.⁽⁶⁹⁾

The Islamic invasion and subsequent depopulation of the clayey, wheat-growing regions of the Duero Valley and other areas lying in the [83] buffer zone between the two cultures led to an immediate decline in wheat production from what it had been in Roman times. The wheatgrowing areas lying within Islamic domain continued to be cultivated by the indigenous population, whether Mozarab or Neo-Muslim. But, since non-Muslims were not allowed to bring new land under cultivation, the Mozarab agricultural establishment was effectively frozen. It could only decline.⁽⁷⁰⁾

The continuous flow of Mozarabs from al-Andalus to the Christian north must have contributed to a continued decline in wheat production, accentuated in the ninth century, when thousands of Mozarabs departed in the wake of martyrdoms at Córdoba and other disturbances in the reign of 'Abd il-Rahmân II. That the Mozarabs who settled in rural León came mainly from wheat-growing areas -- Toledo, Coria, Córdoba -- is evident from the names of the settlements they founded: Toledanos, Coreses, Villa de Cordobeses.⁽⁷¹⁾ Moreover, although these settlers frequently built irrigation canals and other water-conduction channels, they did not know the Arabic irrigation terminology which later passed into common usage in much of Christian Spain, in spite of their bilingualism, which the documents reveal in other areas of life. One can only conclude that these cultivators had been wheat-growers in al-Andalus and had never been ex-posed to irrigation agriculture.⁽⁷²⁾ The migration of Neo-Muslims from the countryside to the cities to join in the burgeoning artisanal economy must also have added to the decline of wheat production.

BALANCE BETWEEN IRRIGATION AND DRY-FARMING

The relationship and balance between irrigated and dry-farming land was of particular interest to Muslim jurists because the two land-use types were taxed according to different scales. Both the tithe and the land tax were adjusted to the productivity of land, which was largely a function of the way it was watered. Land which was not watered artificially was called *ba'l*, as opposed to irrigated land -- *saqi*. Settlers had to take pains to establish the legal nature of their land -- a caution which is recalled by surviving place-names: Albal, Balbacil, Balazote, the last paradoxically meaning "dry land of the diversion dam" (*ba'l al-sudd*), possibly indicating a change in tax status.⁽⁷³⁾ The tithe was less on irrigated lands than on unirrigated, to recompense the cultivator for his additional labor. The land tax, however, was attuned to the productive value of the [84] land and tended to be higher for irrigated lands, a practice carried over by the Christians.⁽⁷⁴⁾

Scholars, moreover, attempted to characterize the entire country in these terms. Malik, the legal authority whose precepts were most followed in al-Andalus, had said it was illicit to pay rents in kind. But other scholars held that only in irrigated areas like Egypt, where the harvest was assured, should payment be always demanded in coin. In dry-farming areas such a demand would be unjust, owing to the undependability of harvests. It therefore became a topic among jurists to decide whether al-Andalus should be considered an irrigated land or a dry one. The Egyptian jurisprudential school counted al-Andalus an irrigated land, due to its supposed hydrological similarities with Egypt; but the Medinese school claimed that it was a dry-farming area, that it needed more rainfall than Egypt, and

that, therefore, payment in kind should be accepted. The latter opinion was followed in Islamic Spain.⁽⁷⁵⁾ More interesting, perhaps, than the actual intricacies of taxation are the varying perceptions that eastern Muslims had of the Andalusí environment. It seems fair to say that al-Andalus was generally viewed by Arab authors as a place where irrigation agriculture predominated but where it was needed precisely to overcome serious climatic obstacles. Drought was an ever-present threat and its deleterious effects multiplied if continued over a number of years.

To summarize the processes of agricultural development in al-Andalus, we may agree with J. A. García de Cortázar that the broad pattern of Andalusí agriculture, at its inception at least, resembled that of Visigothic Spain with a monetary economy superimposed upon it.⁽⁷⁶⁾

But that is not the whole picture, because over time the original balance among agricultural sectors changed radically, the major shift being a reduced reliance on extensive cereal culture and a greater reliance on intensively cultivated irrigated gardens surrounding the towns. The Muslims expanded the productivity of sedentary agriculture by exploiting soils and microclimates not utilized to advantage previously, by introducing new crops, and by importing a hydraulic technology capable of sustaining them. The result of these processes, particularly those facilitating the intensive exploitation of individual parcels, was a filling in of rural space with a denser agricultural settlement, although the locus of this settlement gravitated towards the towns and alluvial valleys, leaving former wheatlands largely empty (or perhaps turned to pasture steppe-land). The [85] relationship between agricultural development and the herding and forest sectors is discussed in sections 6 and 7, below.

5. Dynamics of Settlement and Growth: The Christian Kingdoms

In many accounts of the history of medieval Spain the processes of "Reconquest" and "Repopulation" are presented as linked events, settlement following, in ever more southward-lying bands, upon the successive conquests of segments of the peninsula won from the Muslims. But the linkage of the two processes ought not to obscure the internal modalities and mechanisms of settlement, which depended upon specific demographic and economic contours of the populations involved and which, in the final analysis, were as important in shaping the future societies of the Christian kingdoms as the conquest itself.

Indeed, the earliest phases of settlement were not dependent on conquest so much as on the occupation of such no-man's-land as the Duero Valley and uninhabited buffer zones in the west of the Catalan counties of Barcelona and Ausona. Differing dynamics of population growth accounted for the differential pace of these early movements. In Catalonia, the mountains were overpopulated and empty spaces on the plains filled up quickly, by 950. In León and Castile, the mountainous populations of the Cantabrian-Basque chain that fed the settlements of the tenth century did not have enough weight to provide as dense a settlement, and therefore the transfer of mountaineers to the plains in the west led at first to dispersion and not, as in the east, to a new phase of population growth. The Braudellian notion of the mountains as a continuous source of population for the plains can be accurately applied to both foci of tenth-century settlement, but this fact

alone is not necessarily indicative of "overpopulation" (in any case, a relative term with numerous dependent variables) uniformly throughout the Cantabro-Pyrenean chain.

Nevertheless, there were numerous similarities between the modalities of settlement in the east and west of the peninsula, where one can describe a process of the steady settlement of plains which stimulated cereal and grape production, causing a massive change in the landscape as well as corresponding change in the dietary habits of people formerly used to a mountain ecology.⁽⁷⁷⁾

THE SCALE OF SETTLEMENT

[86] In Castile and Leon low population density controlled both the pace and contour of settlement throughout the entire period. In the ninth and tenth centuries demographic growth was vegetative at best. Although we can describe the signs of progressive intensification of settlement, few regions became densely populated. Accurate figures are rare and the best data comes from a relatively late period. Even so, Gimeno's figures for Soria in 1270 reveal a range in density of rural settlement from 1.8 persons per square kilometer to 6 at the greatest.⁽⁷⁸⁾

The dispersion of settlement, inevitable owing to the tremendous excess of land relative to the scant number of settlers, can be appreciated from various estimates of the average population of a hamlet (*villa or vico*, which Garcia de Cortázar⁽⁷⁹⁾ defines as a segment of land surrounding a dwelling and including a variety of appurtenances such as cultivated fields and meadows, mills, and a range of undeveloped land) or a village (*aldea*, a larger aggregation, whose description with an Arabism is significant). There is no hard line between a hamlet and a village, but the average population seems to have ranged from 12 to 60 in Castile, and from 20 to 90 in Catalonia, where settlement was denser. For even less well-populated areas, the figures range from an average of 10 per village in Soria and the early Extremadura to 4 or 5 households for Upper Aragón.⁽⁸⁰⁾

The small scale of these settlements can be appreciated not only from the scant population figures, but from indications, however impressionistic, of the size of buildings and parcels. In 915 the Count Berulf recounted having settled certain villages in the Valley of Ardón "with small buildings" (*ex parvis edificiis*). There are numerous indicators of the smallness of parcels, not the least of which was their scant monetary value: a parcel worth only one sheep must have been minute.⁽⁸¹⁾ Another indication of scale of settlement is the slow evolution of the road network. The early settlers of Castile and León settled along established roads (*calzatas*, which usually indicated a Roman road) and had no neighbors. By the mid-tenth century, in certain better populated areas, like the Mozarabic foci in the Valley of Ardón, field perambulations in land transfer documents began to show a plethora of newly established roads (*karrales*), indicative of the filling up of the empty space. In the eleventh century, specific mentions of "new roads" (*via nova*) demonstrate the deliberate creation of communications and transportation networks by ecclesiastical [87] landlords who felt the need to organize their dispersed holdings more efficiently.⁽⁸²⁾

SETTLEMENT OF THE PLAINS

The Muslims' onslaught and their early retreat behind a climatic frontier resulted in the depopulation of substantial buffer zones between the two societies. The extent of the depopulation differed from place to place. Both in the far east and far west, early Muslim aggressivity seems to have resulted in the removal of substantial numbers of the original inhabitants: Septimania, the Roman province straddling the eastern Pyrenees, may in the eighth century have been as deserted as the Duero Valley; likewise, large areas of Galicia were said to have been barren for a long time after the devastations of the Muslims -- according to the Chronicle of Alfonso III, who, however, may have overstressed the generality of the depopulation of Christian lands in order to magnify his own colonization attempts.⁽⁸³⁾ The extent of the abandonment of the vast valley north of the Duero -- first stressed by the Portuguese historian Herculano and, more recently, by Claudio Sánchez-Albornoz -- is not fully ascertainable, but must have been substantial. On the whole, the indirect evidence leads to the conclusion of widespread population loss: the Muslim raids and fleeting occupation, combined with the severe drought and famine of the mid-eighth century, would have induced Christians to move northward into the mountains, which were both more secure and climatically more favorable to subsistence, while the lack of toponymic specificity in charters describing the first settlements of the ninth century (*that spring, those hills*, rather than named sites) lends credence to a picture of desertion.⁽⁸⁴⁾

On the other hand, the *direct* evidence, particularly a few much-quoted passages from the Chronicle of Alfonso III, seems hyperbolic and to smack of special pleading: in it, Alfonso I is said to have captured thirty towns from the Muslims and then to have retreated, taking the indigenous Christian population back with him to Asturias; and Ordoño I (Alfonso III's father) is said to have circled the cities of León, Astorga, Tuy, and Amaya with walls and to have populated those places with refugees from Islamic Spain (*populo partim ex suis, partim ex Spania advenientibus implevit*); finally, Alfonso III stresses that the area had been depopulated by the Islamic wars, and revived by his own efforts, a statement taken by Sánchez-Albornoz as indicative of the survival in the early tenth century of [88] the memory of total depopulation earlier. Others have argued, with considerable justice, that the depopulation could not have been total, and that some population, particularly in remote areas, must have remained.⁽⁸⁵⁾

In any case, it is not necessary to argue for the totality of depopulation to agree that both the Duero Valley and the plains of Vich and Barcelona (captured by the Christians in 801) were characterized throughout the ninth century by a very low density of population, which made these regions desirable for settlement.

The attractiveness of empty land for settlement was always tempered by strategic considerations imposed by the proximity of the frontier, on the one hand, and the relative aggressiveness of the enemy, on the other. The towns resettled by Ordoño I were all of strategic importance, necessary for stabilizing the frontier and providing secure bases for rural development. For similar reasons, some lands of marginal agricultural value were cultivated to achieve, for defensive purposes, a relatively high population density in strategically important regions, only to be abandoned later as the frontier advanced. The rhythm and quality of settlement were directly affected by the pattern and intensity of

Muslim raids: thus vineyards, for example, which required year-to-year stability for their development, could not be planted too close to the frontier or in areas subject to raids, and, further, when the raiding became intense, as during the reign of al-Mansûr (end tenth century), frontier landlords, such as the monastery of Cardeña, actively sought northward-lying land, towards the headwaters of the Ebro, in order to ensure continuity in cereal production in a region safe from attack. The southward expansion of monastic estates was directly affected by the proximity of the enemy. Cardeña's early properties were nearly all to the north of the Arlanzón River, since the region to the south was still, in the early tenth century, considered too insecure (with reason; the monastery was completely destroyed by a Muslim raid in 920). The same strategic factor explains why, during this period, monastic landowners such as San Millán de la Cogolla maintained a very careful balance between the production of cereals, dependent on extensive dry-farming (where extent was limited by strategic considerations), and intensive cultivation, by irrigation, of riverside properties close to the mother house. As the frontier receded, the agricultural balance tilted decisively towards extensive cereal cultivation.⁽⁸⁶⁾

The availability of land led to idiosyncratic juridical, social, and economic forms characteristic of frontier settlement, both in the Duero Valley [89] and in Catalonia. The typical form of acquisition of property was the *aprisio* (*presura*, in Castilian), a modality of "squatter's rights" in Germanic customary law which, owing to the exaggeratedly low density of population, came to acquire particular vigor in medieval Spain. Juridically, *aprisio* was a formula whereby any person or group of persons could lay claim to land simply by virtue of occupying it (*presura*) and by bringing at least a portion of it under cultivation (*escalio*). (How much had to be cultivated need not be debated; the idea was to establish an economically viable unit, including cultivated land, pasture, and woodland.) Land conquered from the enemy was, under Germanic law (and Islamic law as well), held by the sovereign, and, in the case of *presura*, was considered an implicit grant, made explicit (by virtue of thirty years settlement) only at the time of its alienation, when title had to be shown. The net result was something close to an allode, held by a free proprietor, outright or by emphyteutic contract.⁽⁸⁷⁾

The mood of early *presuras* is captured in a description of a church in the Mena Valley founded by an abbot named Vitulo in the late eighth century, in a charter dated 800: "there we established the aforementioned basilicas; we cultivated; we planted; we built there houses, cellars, granaries, with wine-presses and cauldrons, orchards, mills, apple trees, grapevines and other fruit-bearing trees." Frequently such documents stipulate that the *presura* was accomplished with the signatory's own hands (*de manibus meis*), a striking evocation of the reality of life on the frontier.⁽⁸⁸⁾

Prominent in the early settlements of the Duero Valley were individual clerics or groups of monks, attracted by conditions of a rigorous life conducive to the cultivation of ascetic values. These small churches (which in reality resembled other *presuras*, with the added appurtenance of a church or chapel) tended to coalesce, by donation, into the great monastic domains that emerged in full relief towards the middle of the tenth century to fulfill, in effect, urban functions in a land devoid of towns. Much of the best agricultural land in León and Castile was controlled by monasteries, to whose values, needs, and tastes

we must look for standards by which the landscape of the newly occupied territories was organized.⁽⁸⁹⁾

Migration of mountain people to the plains entailed a shift from a high-altitude herding economy with limited agricultural horizons to a Mediterranean economy along Roman lines. This shift was furthered, in León particularly, by the massive migration of Mozarab dry-farmers from al-Andalus, beginning in the mid-ninth century, as a result of the [90] persecutions during the reigns of 'Abd al-Rahmân II and Muhammad and continuing in a diminishing but constant flow over the next century or so. These Mozarabs, settling as did migrants from the north, in joint family units or as groups of monks, organized a vast area of the Leonese Duero Valley. For example, the Valley of Ardón (originally called Mahamut or Mahmude -- Muhammad -- after an early leader) was settled almost completely by Mozarabs who clustered in small hamlets bearing an indelible Mozarab stamp (e.g., Villela de Aiub; Banuncias from Beni Iuniz, also called Villa Iuniz; Villa Vanizati, from Beni Zaid).⁽⁹⁰⁾ These Mozarabs migrated from a country where a Mediterranean agriculture along classical lines, with important new technological and aeronomical innovations, was flourishing. Perhaps one great symbol of the Mozarabic impact on the Leonese economy was the taste for olive oil, the importation of which played a significant economic role. But the fine structure of the Mozarabic impact on the landscape north of the Duero has not yet been investigated.

The settlement of the Duero Valley was a process which continued throughout the entire period covered in this book. The Christian victory at Simancas in 939 made possible the settlement of the Tormes basin (around Salamanca, well south of the Duero), but the situation there remained unstable and insecure until the conquest of Toledo in 1085, which opened for settlement the entire region between the Duero and the Tajo. In effect, the process was never completed, owing to the constant loss of population and to the inability of the stable population to generate much internal growth. In a situation where, as in the settlement of the American west, there was always more land available farther towards the frontier, it was difficult to maintain the stability of any settlement. Every new settlement entailed the loss of productive labor from an older settlement. Early *presuras* were frequently abandoned as the settlers moved on to a new situation either more attractive agriculturally, socially (remission of dues and services by lords as an incentive, for example), or economically (rural to urban migration). These would then be granted out again, if new men could be found to take the place of those departing. Villagers were able to coerce their lords into lightening feudal obligations by the threat of mass migration southwards. Other lords, desirous of attracting population, offered incredible exemptions, such as the active recruitment of criminals and wanted men and excusing of crimes, even homicide, granted in some of the early town charters.⁽⁹¹⁾ The most general trend was short rather than long migrations, however: leaving the hamlet of [91] one's birth for a neighboring village, or moving from one seignorial domain to another where terms were more attractive. The net result was that lords were reluctant to have new villages in their own domain populated with their own men, and so they sought to entice the men of other lords or *homini excusi*, men who had no lords, to populate their lands. The obvious friction that such a strategy produced led to general attempts by lords in the late tenth century to prevent short-range migrations. A necessary corollary to this inherently unstable demographic situation was the persistent cheapness of land throughout the tenth century. Sánchez-Albornoz gives

illuminating examples of the phenomenon: the barter of a parcel of land in 946 for cloth; another in 949 for a goat and a kid; and one in 959 for a ram and a quantity of iron.⁽⁹²⁾

The occupation of the plains of Catalonia was accomplished through analogous processes, although with a more definitive conclusion: empty spaces filled up (essentially by around 1020) with a consequently significant leap in population density that allowed the agrarian economy to enter a new phase of intensification which in turn underwrote the urbanization of a metropolis -- the first in Christian Spain -- Barcelona. Settlement was achieved by the migration of mountain people first to the foothills and then in mid-tenth century onto the plains of Vich and Bages, expanding around A.D. 1000 to the middle Segre region in the south of the county of Urgell, the western frontier of the counties of Ausona (Vich) and Barcelona, and, farther south, the lower Panadés littoral.⁽⁹³⁾ Here *aprisio* seems to have played a similar role as an incentive to settlement, although it developed in a social and demographic context different from that characterizing the Duero Valley. Few areas where *aprisio* was first practiced (in the late eighth century) -- the mountainous counties of Pallars and Ribagorça, and the northern Catalan counties (Gerona, Ampurias) could have been devoid of rural population. Therefore, the new settlers, holders of *aprisiones*, came into conflict with older established residents, who held land under much less favorable conditions, and their lords. Thus *aprisio* assumed the status of a legal fiction used for political reasons to dispossess older inhabitants who had remained on the land throughout the Muslim occupation.⁽⁹⁴⁾ As in the Duero Valley, the peasantry was composed generally of small freeholders, paying a simple *cens* under an emphyteutic contract, and the process of settlement was likewise directed primarily by ecclesiastical lords. The counts may have preferred to let monasteries direct the actual work of settlement, as when Borrell granted [92] a monastery specific rights to make *aprisiones* in a specified region. The monastery of San Cugat was typical of a tenth-century Catalan monastic establishment involved in bringing no-man's-land on the southern frontier under the plow. After the mid-tenth century there was little good land available inland from the frontiers and by the end of the first quarter of the eleventh, according to Bonnassie, the colonization effort had lost the spontaneity characteristic of *aprisio* and those who aspired to such grants had to accept harder contractual terms.⁽⁹⁵⁾

THE EXPANSION OF CEREAL CULTIVATION

Abbot Vitulo's description of his *presura* is an adequate illustration of the implantation of a Mediterranean agricultural regime, based on the cultivation of cereal grains and grapevines, in an area which since the early eighth century had been, where inhabited, largely an extension of mountain herding economy. Such a phenomenon involved a number of cultural processes, including the migration to the mountains of plainsmen used to a Mediterranean diet; the learning by mountaineers of a new kind of agriculture, with the consequent readjustment of dietary tastes and habits; the role of Mozarabs in transmitting such information; technological innovations permitting such a large-scale transfer of agrarian regimes -- all of which are poorly documented and only dimly understood. In broad outline, the movement can be characterized by a steady replacement in a southward direction of wood- and grazing-lands, by cereal and vine cultivation, whose pace and rhythm (increasing dramatically in the tenth century in Catalonia, the eleventh in the Duero Valley) was determined by the generally upward movement of population.⁽⁹⁶⁾

Grain was transformed into food by means of water power, and the building of the water mill is perhaps the best documented and most reliable indicator of the diffusion and intensification of cereal growing. There is a plenitude of documentation attesting to the building of mills in the Cantabrian and Pyrenean mountains in the ninth century and all over Christian Spain in the tenth. Both Muslims and Christians understood this technology (see Chapter 7). The profusion of tenth-century documents relating to the alienation of shares in mills (they were built by collectivities of free peasants, when not by monasteries or lay lords) demonstrates the progressive spread of cereal production in substitution of meadows and woodland in León and in Old Castile, in the vicinity of [93] Burgos. The mention of clusters of mills (such as three in Nájera acquired by the monastery of San Millán de la Cogolla in 1038) indicates the expansion of cereal production in a given regional focus. The documentation increases in the eleventh century and falls off in the twelfth, indicating that expansion of cereal production north of the Duero had slowed down or stopped. Mills were especially typical features of the Catalan landscape, and profuse documentation exists from the ninth century on; again in an area where cereal production was particularly intensive, as in the plain of Barcelona in the late tenth and early eleventh centuries, mills tended to be clustered together, built in lines along the rivers.⁽⁹⁷⁾

Generally the center and east of Old Castile and much of the Leonese plain were good wheat lands. Cereal production expanded there steadily throughout the eleventh and twelfth centuries when population pressure in some areas of Castile even forced the conversion of vineyards and flax fields into wheat.⁽⁹⁸⁾ Cereals were grown on open fields under a cultivation system called *año y vez*, meaning that a field was planted to wheat one year and left fallow the next. In many areas no rotation was practiced, but in others a two-course rotation appeared when organized fallowing became an economic necessity. The advantage of a two-course rotation was that local herds could be grazed on half of the fields annually, a stratagem that was unnecessary as long as there was abundant uncultivated land (*monte*). In areas where local herding was particularly strong, a further adaptation was made in the form of *cultivo al tercio*, which freed more space for fallow grazing. Given the summer aridity and the continued use of the light Roman plow, it was never feasible to introduce the northern European three-course rotation, with a spring sowing; the only way to increase wheat cultivation was by extending the arable land at the expense of pasture and woodland and, later, even of vineyards and irrigated fields. The increasing trend away from local towards transhumant herding -- also an effect of increased use of land for agriculture -- heightened the dependence of cultivators upon fallowing, to make up for the loss of local sources of fertilizer.⁽⁹⁹⁾ Yields were accordingly very low, from 3.4 to 4.2 to 1, for wheat and barley (thirteenth-century figures from Silos, which compare unfavorably to the normal northern European yield of 1:5 for wheat and 1:8 for barley).⁽¹⁰⁰⁾

Wheat was rich people's food. In the *Poema de Fernán González* the count is offered barley bread by a monk who had none of wheat to [94] provide. The usual poor man's bread was of rye or *comuña*, which was wheat and rye mixed. Lords could determine production allocation among the different cereals by demanding payment of dues in kind of wheat and barley in varying ratios. Thus in the sandy soils of the Galician littoral, where rye grows better than wheat, wheat cultivation still gained (with accordingly low yields) because the lords demanded it.⁽¹⁰¹⁾

Grain was not only grown for human consumption but also was harvested green for forage, particularly for stabled animals. These *herrenales* (*ferraginers* in Catalonia) were typically enclosed and for the use of individual proprietors. Oats were rarely grown before 1000, but increased dramatically in production in Catalonia in the first half of the eleventh century. Another important fodder was the turnip, which made a great impact in Galicia in the late thirteenth century when its cultivation permitted a substantial reduction in fallowing. The climatic situation there made a genuine rotation system possible: winter corn was harvested in the summer; then turnips were planted and harvested in the spring; then spring corn (barley and millet) was planted and the cycle repeated itself every two years.⁽¹⁰²⁾

VINEYARDS AND FRUIT TREES

The other cornerstone of Christian agricultural expansion was the grapevine, whose diffusion entailed a complicated interweaving of cultural, climatic, and economic processes. That the diffusion of the grape was intimately linked to that of monasticism is beyond doubt; the Benedictine rule specified that monks should drink approximately one litre of wine per day. The demand for wine resulted in the progressive conversion until the end of the twelfth century, first of wasteland, then of cereal land, into vineyards. As cereal production expanded, the value of vineyards rose. Grape cultivation was especially attractive to the small free proprietor. He could cultivate a vineyard without recourse to a plow and sell the surplus, placing him in better position to maintain his freedom than the small cereal farmer, dependent on others for milling and for iron implements.⁽¹⁰³⁾

Grapes became ubiquitous; however, the standard mentions of *vineas* in lists of appurtenances frequently refer to backyard vines rather than to medium to large-scale agricultural operations involving a commercial crop.⁽¹⁰⁴⁾ Nevertheless, more and more land was converted to grapevines, [95] as demand rose. In Castile-León vineyards may have been primarily converted from cereal-producing land. In Catalonia, where extensive terracing was carried out from the tenth century on, vineyards tended to invade hilly country, at the expense of wasteland. Because of a limited transportation capacity (the transportation of grapes and wine to the lord's residence was a feudal obligation in Castile), the scant commercialization in a society with virtually no towns, the unwillingness of peasants to invest in vineyards too close to the frontier, grapes were grown in many places where their cultivation ceased after the crop was commercialized: throughout León, where grapes were the most important crop, in spite of the acidity of the soil; in the Arlanzón-Upper Ebro region of Old Castile, where it is now considered too high and too cold for grapes, but where in the high middle ages they were grown anyway; in Catalonia, in the Pyrenaic foothills of the Upper Segre, the valley of Ribes, and the plain of Cerdaña, "where in total defiance of natural conditions" they were grown for three hundred years.⁽¹⁰⁵⁾ The spread of grape cultivation in Upper Aragón in the eleventh century is of particular interest, in view of the marginal climatic and soil conditions there, but more especially in view of the highly reputed wines produced in the neighboring Islamic kingdom centered in Huesca. It may well have been the case that although the Muslims grew grapes in plenteous supply, they produced only enough wine for the local trade, responding to what must have been a lower per capita consumption than was current among Christians. Indeed, the plethora of contracts for new vineyards in Aragón between 1150 and 1180 could only have meant that wine was being exported.⁽¹⁰⁶⁾

In a poor Mediterranean society, with scant cereal production and an unvaried diet, figs and other fruits formed a significant part of the daily fare, especially of the poor man. When cereals were generally available, fruit trees declined as sources of staple food and their products acquired the familiar role of a dessert food. In the northwest of the peninsula, the apple was the most commonly grown fruit tree. Those of the Basque country were famous, and the southward migration of Basques surely entailed the diffusion of the apple. In wine country, apples and other trees were intergrown with vines or used as vineyard borders. Figs, pears, cherries, peaches, and plums were also widely grown and, wherever possible, irrigated. Of these, the first two were of particular importance, both in the west and east of the peninsula (note the incidence of place names derived from the fig tree: Figueiró, in Galicia; Figuera, Figueres, in [96] Catalonia). The Catalans in particular seem to have matched the Arabs in their mastery of grafting techniques -- and at the same time as the school of Andalusí agronomy was flourishing. A document of 1051 cites three varieties of pears all grown in the same garden.⁽¹⁰⁷⁾

It has been noted that the Duero Valley lay north of the climatic limit of olive cultivation. Yet the taste for olive oil in cooking was widespread, as a result of the migration of masses of Mozarabs. Since it could not be produced locally, the Leonese had to import it from Zamora, which had been settled in the tenth century mainly by Mozarabs and which served as an entrepôt for the oil trade. The olive was not grown in Catalonia until the mid-tenth century, when isolated trees are mentioned as curiosities. By the early eleventh century it had become an established culture.⁽¹⁰⁸⁾

IRRIGATION IN THE CHRISTIAN KINGDOMS

In dealing with the development of irrigation agriculture in the Christian kingdoms, we again face a complex pattern of cultural and technological diffusion. The Christians, like the Muslims, were heirs of Roman agricultural techniques, and irrigation was practiced by Hispano-Romans. Those *Hispani* -- descendants of refugees from the Islamic conquest -- who were resettled in the future Catalonia in the mid-ninth century were authorized by Charles the Bald to follow their old irrigation customs, to utilize "canals (*aquarum ductus*) for their necessities . . . according to ancient custom."⁽¹⁰⁹⁾

Irrigation from perennial water sources by gravity-flow canals was a technology shared by all peoples of the Mediterranean basin.

Yet, in spite of the widespread diffusion of irrigation, one cannot describe any large-scale hydraulic agriculture, except in certain areas of Catalonia (and there not until the eleventh century). In the plain of León, where the hydrological potential for irrigation was excellent,⁽¹¹⁰⁾ and in Castile as well there were numerous small monastic canal systems wholly contained within the demesne of the monastery. Throughout the entire period monasteries sought riparian land, where they would conduct water from diversion dams into canals to irrigate small vegetable gardens, whose produce was used to supplement the diet of the monks. (The pattern is significant, because it is indicative of the inability of Leonese and Castilian [97] society to commercialize the products of irrigation-intensive agriculture -- although not those of vineyards, also cultivated intensively.)

The manner in which water sources, particularly rivers, were utilized in the Duero Valley was shaped by the frontier situation, and the modalities of appropriation of water rights greatly resemble those of the American West and contrast with the public nature of water in the river-derived systems of Islamic Valencia. Almost all of the documentation indicates that water was subject to *presura* and that prior appropriation --"first in time, first in right"-- was the rule of the day. The Fuero of Logroño (1095) contains a perfect expression of this norm: "Whoever can find water for irrigating pastures and vineyards, or for mills or orchards, or wherever they might have need, let them take it."⁽¹¹¹⁾

Prior appropriation by individuals was a consistent principle asserted in grants and pled in litigation over water rights. The monastery of San Isidoro in the city of León owned an irrigation system derived from a dam which the infanta Sancha had granted it as a monopoly. Other claims derived from *presura*. In 917, an Abbot Balderedo, also of León, successfully sued for the return of water diverted away from his mill on the Bernesga River, on the grounds that his ancestor had taken that water by *presura* in 875. On many rivers, monasteries, through the process of accretion of dams, mills, and canals through donation, could allege prior right. Therefore, in case after case, one notes that others seeking to use the water of such a river did so on sufferance of the monastery, as major lord. The monks of Ardón (León) were accustomed to grant the use of water downstream from their mill and brought action against a mill, claiming its ill effect on their own mill. It is clear that the monks claimed a proprietary interest in the water and that riparian rights asserted by downstream users could not hold up against the appropriative right of the monastery.⁽¹¹²⁾

Likewise, it was the policy of the monastery of San Pedro de Cardena in Old Castile to control and exploit the water of the Arlanzón for milling and irrigation. The monastery received in donation an entire stretch of the river "from bank to bank" (impossible in Roman law, where the channel is always public); purchased a canal leading to the monastery of San Martín; and won rights to the water of another canal near Burgos in litigation before the count of Castile in 932. In the same region in 956 the men of Villavascones, a village near Burgos, had to negotiate with [98] the Abbot of San Martín for the right to use the river water for the purpose of irrigating their fields. The Abbot promised to give to the villagers and their council a specified, measured portion of the water that he and the monks had purchased, so long as the villagers promised to maintain and clean the main channel. The grant was to remain in effect permanently, unless the villagers refused to clean the channel. Apparently the subject of the negotiation was the use of a canal system owned by the monastery. But the legal context in which the agreement was framed was the private absolute ownership of river water. The tendency in irrigation in León and Castile was for large seignorial domains, almost always ecclesiastical, to aggrandize the rights, ultimately by virtue of prior appropriation, through donations and purchase of water and water power, and for the free use of these to become increasingly out of the reach of small free proprietors, who in the ninth and tenth century had themselves been the owners or co-owners of mills and irrigation water, typically expressed in shares (so many parts of a mill) or in hours (the right to use water for a specified time), all of which is appropriative rather than riparian in nature. Characteristically, a dispute over Arlanzón water in 1178 was waged between Cardena and a group of nobles; the resultant

settlement (instituting a turn of five days of water for the monastery and three for the *infanzones*) was regarded as a loss to the monastery.⁽¹¹³⁾

The result of this appropriation of water by private individuals and institutions was a landscape of rivers bordered by *local* huertas, belonging typically to monasteries who absorbed their products, – and therefore the absence of interconnected regional huertas.⁽¹¹⁴⁾ Quite distinct was the situation in Catalonia, where entire irrigated zones arose, in response to the demand of the urban market. The Catalan situation is unusual because irrigation there developed, in effect, as a byproduct of milling. Because of irregularity in the flow of the rivers, the mills were built on diversion canals at some distance from the source. Below the mill, a return ditch, the *subtus rego*, returned the water to the river, irrigating gardens (*terras subreganeas*) along the way. Around the year 1000, in Pierre Bonnassie's description, smallholders were creating the irrigation system, either individually or in collectivities of villagers, although lay and ecclesiastical lords tended to own most of the mills. The result was that by the early eleventh century Barcelona was surrounded by *hortos subreganeos* wherein were grown vegetables and fruit for the urban market.⁽¹¹⁵⁾ The parallelism with Andalusi towns is striking, as is the analogous role played by mills (in [99] the plain of Barcelona) and norias (around certain Andalusi towns) in the development of irrigated huertas.

Land use in Christian Spain was divided in varying proportions among cereal fields, vineyards, irrigated orchards or gardens, meadowlands or woodland (which was used for grazing and gathering activities). New cultivation implied either a shift in agricultural regime or deforestation. In general, forests yielded to cereal lands, which in turn were partially diverted into vineyards. The development of a cereal-grapevine economy on the plains set up a natural rhythm of commercial exchange with the mountains, which were poor in wheat, rich in wood products and animals. The system was built by small, free proprietors but over a period of time tended to become aggrandized by powerful lords, particularly monasteries. In the last third of the thirteenth century the old equilibrium was broken by the seignorial cultivation of commercial crops at the expense of local consumption.⁽¹¹⁶⁾

FROM PRESURA TO REPARTIMIENTO

As the war against the Muslims pushed the frontier southward, land was opened for settlement which was not largely empty but which contained an organized landscape, frequently with Muslim inhabitants. Thus, beginning with the conquest of Toledo in 1085, a new modality of settlement had to be devised. Rather than leaving the business of settlement to the will of individual settlers or groups of settlers, the royal administrations of Castile and Aragón took an active hand in the process through the surveying and apportionment of already developed parcels of agricultural land – the method known as repartimiento.

The standards governing repartimiento differed from situation to situation: in Zaragoza (captured 1118 by Alfonso I of Aragón), Tudela (captured 1119), and Tortosa (1148), the urban Muslim population was obliged to depart the city within one year, but rural landholding patterns remained intact in the verdant, irrigated huertas of the Ebro

(including 25,000 acres around Zaragoza). In Mallorca and Valencia, James I strove to maintain intact the pattern of small irrigated properties which the Muslims had utilized so effectively, although a series of revolts beginning in 1248 led to an exodus of Muslims from most of the irrigated areas of the Valencia littoral. The Castilians generally followed a policy of sharing the towns with the Muslims and of keeping the structure of Islamic [100] agriculture intact where possible (e.g., Toledo). But the policy changed radically with the capture of Baeza in 1226, after which Muslims were uniformly expelled from Andalusian towns and from much of the countryside as well. The case of Murcia offers a unique case of a double repartimiento, one Castilian, one Aragonese, permitting a comparison of styles. The town was originally captured by Alfonso X of Castile, whose notion was to effect a slow displacement of Muslims both from the town and from the huerta, maintaining the irrigation system intact, and to grant huerta land to townsmen as a means of holding them there. This process was aborted by the Muslim rebellion of 1264, which resulted in a new conquest by Alfonso's father-in-law James I of Aragón. James had since abandoned his original strategy (as in Mallorca) and attempted to create seignorial domains out of huerta with a subject Muslim population, believing that stability could be best ensured, not by Alfonso's middle-class community but by a strongly armed nobility. When Alfonso returned, however, he continued to move Muslims out of the huerta and replace them with Christian.⁽¹¹⁷⁾

Given these different strategies and outcomes, whose social significance will be considered later, there were three options available to the conquerors for the organization of agriculture in the newly won territories: the Muslim system could be learned and continued; northern dry-farming could be implanted; cultivation could be abandoned and replaced by sheep rearing.

Generally, Islamic irrigation systems were maintained intact. In the case of large, interlocking regional systems with long canals and complicated distribution procedures, the Christians had to take pains to learn the customs from the indigenous population. In the Crown of Aragón the procedure was for a nobleman to hold an inquest at which Muslim irrigators would explain how the system worked and then to issue an ordinance continuing the customary arrangements. Thus in 1106 Fortún Aznárez issued a disposition concerning the distribution of the water of the Irués canal, near Tarazona, based on how the water "used to run in the time of the Moors and as he discovered the truth ... from old Moors." The document then describes the system of turns among hamlets on the canal, the word for "turn" expressed with the Arabism *ador*. The canal was administered by Muslim-style officials, the *çavacequias* (*sâhib al-sâqiya*) of the city of Tarazona and the local *alamis* (from Arabic *amîn*), who oversaw the day-to-day functioning of the canal. A similar procedure [101] was followed a century later in the capture of Valencia: an inquest was held in Gandia by Peregrín de Atrosillo to ascertain the manner in which the Serpis River had been apportioned by Muslim irrigators; the *sâhib al-sâqiya* appeared at the hearing and, under oath, detailed the traditional distribution arrangements.⁽¹¹⁸⁾ Similar hearings must have been held in Valencia city itself, where the Syrian-style distribution system continued unchanged, and in a multiplicity of towns along the eastern coast, where the medieval documentation concerning irrigation frequently included a standard stipulation that water distribution arrangements should continue as they had been "in the time of the Moors."

In al-Andalus, irrigation systems seem to have been administered by urban officials, dependent upon the qadi (the *sâhib al-sâqiya*) or by autonomous communities of irrigators, in all probability organized along tribal lines. When these systems were captured, the former were easily assimilated into the Christian municipal structure, whereby the irrigation officers became employees of the town council. In the case of the autonomous communities, such as those of the Valencian huerta, tribal organization seems to have been supplanted by guild organization. This would have been natural, because most of the Christian immigrants who became irrigators had been townsmen in Catalonia and would have been familiar with the organization of guilds and with the method of electing officers and assessing dues, all of which was superimposed upon specific distribution arrangements that had been devised by the Muslims centuries earlier.

The transitions were, on the whole, remarkably smooth, and the prosperity of Valencian towns in the later middle ages was owing in part to the continuance of a high level of production of huerta commodities for the urban market. The tendency, noted above, towards the patrimonialization of water does not appear to have affected the transition adversely, except in the case of the Segriá canal in Lérida, which became the private property of its early Christian administrator, Peter Raymond *Çavacequia*. The basic issue appears to have been the collection of the irrigation tax or *cequiatge*, which may have been misunderstood by certain of the early conquerors, who were used to collecting feudal dues on public services like ovens and mills and who failed to realize that the *cequiatge* was, in fact, not a tax, but a maintenance charge, without which the canal could not be maintained. In the case of Lérida, the town eventually (in 1213) had to purchase the canal. The irrigation tax of Jaca was granted to the Hospitallers in 1250, and the same appears to have occurred in various [102] small huertas in the kingdom of Valencia.⁽¹¹⁹⁾ Most of these usurpations must in time have reverted to the canal users, because the canals could not be maintained without the investment of the tax in the maintenance of the system.

After the conquest of Toledo and the securing of the Tajo and middle Guadiana basins, agriculture around the city remained much as it had been: irrigated gardens and vineyards, farmed mainly by Mozarabs, with frequent interstitial uncultivated fields (*tierras blancas*), representing parcels vacated by fleeing Muslims. There were also numerous olive groves (*olivares*), although, due to the loss of Muslim population, olive production did not regain its pre-conquest level until the fourteenth century. Dry-farming areas to the north of Toledo (Madrid, Guadalajara) and to the south (from Cáceres to Cuenca) were given over to cereal production, settlers receiving grants of open fields *ad anni vicem*, the customary biennial (*año y vez*) rotation (in individual parcels, each divided in two, rather than in communal fields). This was an interim economy. By the end of the thirteenth century, transhumant sheepherding had become the dominant form of agrarian enterprise throughout the central meseta.⁽¹²⁰⁾ In the heartland of Andalusia (Córdoba, captured in 1236; Jaén, 1246; Seville, 1248), since most of the Muslim population fled before the hardened policies of the conquerors, the agrarian regime appears to have suffered a radical transformation. Fields were abandoned for pasture; some cereals were cultivated according to northern methods (land transfer documents specify that cultivation was to be at *año y vez*); and a high level of olive production was maintained. These towns, which had supported a mixed agriculture, with noria-based huertas, before the conquest, were converted into herding centers.⁽¹²¹⁾

A more complex pattern characterized the occupation of Murcia. There, the economy of the town's huerta and the cereal-producing lands, renowned in Islamic times, of the nearby Campo de Cartagena, was built upon shifting sand, namely the necessity of retaining a Muslim farming population more inclined to flee to Granada. Land, both irrigated and unirrigated, was deserted by the steady stream of migration, those fields farthest from the city being the first to be abandoned. If irrigated, they turned quickly to marsh. Nevertheless, the huerta continued to produce a variety of crops, from figs, cereals (wheat and barley, attested to by an abundance of mills located along irrigation canals), hemp and flax. In the Campo de Cartagena the Castilians had attempted to implant a [103] traditional wheat-growing regime, granting out parcels at *año y vez*. This attempt failed; as Muslims departed Christian rents fell and they too departed, leaving the area completely depopulated and used only for grazing. As happened in Andalusia, the spread of sheep raising was prodigious: it advanced at the expense of both cereal production and irrigation.⁽¹²²⁾

In summarizing the Christian Spanish experience with irrigation, within the context of the issues raised by Wittfogel (see Section 4 of this chapter), I would stress again that the basic issues were cultural and economic, not institutional per se. Wherever the Christians learned Islamic techniques and used the surplus to support urban growth (e.g., in Valencia) continuity with the general structure of pre-conquest economy was total. Irrigation practiced in León and Castile did not produce the same results because the surplus was diverted to seigniorial consumption. Nor was conquest necessary to effect a transition: the Catalans did it in Barcelona, initially by utilizing resources originally mobilized for water power, and later by the northward diffusion of noria technology.⁽¹²³⁾

6. From Local to Transhumant Herding

The ordered landscape of al-Andalus, responding to an agrarian system tightly interlocked with an urban artisanal economy, had no place for the kind of rapacious, land-devouring pastoralism that later came to characterize the Mesta, whose herds ran rampant over many a settled community in the later middle ages and in early modern times. To a society of town-dwellers and agriculturalists the sheep was an animal primarily raised for meat; its wool was a byproduct. The Christians of the later middle ages turned the equation around: they cared only for wool and ascribed a low value to the meat.⁽¹²⁴⁾

Little is known of the herding enterprise in al-Andalus. The Berber mountaineers were a herding people and practiced a largely pastoral economy. Al-Himyarî notes the importance of sheep- and cow-rearing in the Sierra de Guadarrama, north of Toledo, whither meat buyers traveled to purchase livestock for distribution throughout the country. It can be assumed that the future Aragonese herding centers (Albarracín, Teruel, Daroca, Calatayud) comprising the former *kûra* of Santaver – a Berber stronghold -- had been pastoral centers during the Islamic period. Farther west, the areas most in contact with Christian lands, such as Soria, were also areas of Berber settlement. Berbers were responsible for the [104] introduction of the merino sheep (from Banû Marîn, a Moroccan tribe), but the first citations of merinos date from the fourteenth century, and no conclusion can be reached regarding their initial introduction. Several scholars have noted the similarity of Spanish

and Berber sheep-handling procedures, as well as of the pastoral environments of places known to have been inhabited by Berbers.⁽¹²⁵⁾ Beyond these brief notes all is conjecture.

The settlement of Berber tribesmen in the mountains of the Middle and Upper Marches, together with the important role of herding in the economies of early Christian kingdoms, easily permits the characterization of frontier relations as a confrontation of herding peoples. This was certainly true of the Berbers' fleeting occupation of the mountains of Galicia, where they must have competed with indigenous mountaineers and Gothic refugees for summer pasture. For the Christians, the acquisition of pasture became a central motive for conquering Islamic territory. This is seen in the succession of regions called Extremadura, which has the meaning of the end of the route of transhumance; the early ninth-century Extremadura lay just to the south of the Duero (whence the false etymology associating such territory with far reaches of that river) in a no-man's-land certainly frequented by itinerant sheep drovers. Later, the search for pasture proved a continuing source of friction among Christian powers. The expansion of the Navarrese into Castilian lands in the eleventh century was in part a quest for new pasture, as was conflict between Castile and Aragón over the pastures of Soria, where the Castilian monastery of San Millán de la Cogolla finally obtained sufficient grazing lands for its ample herd in the early twelfth century. The pastures of Islamic Teruel were an incitement to Aragonese expansion. Once it was wrested from the Muslims (1170), the Aragonese were generally content to let the Catalans take the lead in further action against the enemy, although they were quick to occupy the ample grazing lands in the Valencian hinterland, leaving the irrigated lowlands for the Catalans.⁽¹²⁶⁾

Whether the frontier was permeable to Christian or Muslim transhumant herders depends on the kind of transhumance practiced. In the west of the peninsula, the Islamic system was complete, with summer pastures in the central cordillera and winter ones in the Guadiana basin. Muslim herders would have had no incentive to cross the Duero northward with their herds. The herders of the Duero Valley were faced with ever-diminishing space for grazing, as cereal and grape cultivation expanded. After the conquest of Toledo in 1085, vast new pastures were [105] opened to them. Klein suggested that Christians may have had access to southern pastures *before* 1085 through the payment of tolls and protection fees to Muslim authorities.⁽¹²⁷⁾

In the west, therefore, since the Muslims had winter pastures aplenty, it would not have been to their advantage to open the frontier to Christian herdsmen, whose increasing desire to attain that pasture must have added to conflict along the border.

In the Upper March, however, the situation was quite different, inasmuch as that region constituted a natural transit range between the summer pastures of the Pyrenees and the winter pastures of Teruel and Murcia. The range structure would have constituted a natural inducement to permeability of the frontier, which would have been further enhanced by the high incidence of intermarriage among elite groups on either side (e.g., the relations of the Neo-Muslim Banû Qasî with various Pyrenean aristocratic houses).

In the twelfth century, with the decisive shift in the balance of power in the Christians' favor, there is no doubt that transhumance across the frontier was practiced throughout the

peninsula. A variety of documents from Cuenca, Tudela, and Teruel attest that Christians were entering alAndalus with herds of sheep in the first half of the century, and a document of 1183 giving Christian herdsmen title to certain enclosed pastures was signed by the Muslim kings of Niebla and Murcia. In 1200 the bishop of Cuenca levied a tax on sheep being taken to "the land of the Moors" to be sold.⁽¹²⁸⁾

The rise of transhumance in the Christian kingdoms was a result of the process of land clearance and cultivation just described. As more and more land was cleared for cereal production, vineyards, or orchards, less was available for the grazing of local herds. Moreover, as the extent of available pasture land diminished, the lay and ecclesiastical lords tended to fence off pasture previously open to villagers. The latter, using up common land in order to expand grain-producing fields, tended to become progressively excluded from the pastoral sector of the economy. When seignorial herds became transhumant, moreover, the villagers further suffered the loss of fertilizer, for these same herds had previously grazed on village fallow and stubble. Monasteries had maintained large herds from early times: that of San Román de Tobiellas (Castile) had 100 cows, 500 hogs, 24 oxen, 10 stallions, 80 mares, and 10 mules in 822, an early date. By the eleventh century, but before the conquest of Toledo, the herd of San Millán de la Cogolla was so large that it was able to [106] supply the royal palace with 600 sheep, 100 hogs, and 80 cows in 1049 without making a dent in the herd. The Cistercian monastery of Oya in Galicia also had a large herd, yet the Cistercians ate no meat.⁽¹²⁹⁾ Many monasteries, even before the commercialization of wool, appear to have used their herds as a kind of investment, frequently employing the animals in place of money -- the equivalence of 1 solidus, 1 sheep, and 1 modius of wheat was standard. To be sure, the monks used sheep for parchment and domestic wool, but these needs alone do not seem sufficient to explain the great size of monastic herds.

Transhumance, as indicated, was a response by large herd owners to the increasing pressure upon local pastureland. It was a system worked out by large proprietors which tended to exclude peasant cultivators from its inception. At base, it was a function of population density and the expansion of cultivated fields and therefore it did not emerge in full relief until the twelfth century, when Catalan monasteries, such as Santes Creus and Poblet, established summer pastures in Cerdaña, and when, after the capture of Toledo (1085), the Tajo Valley was opened to northern herds. The removal of this large animal population from its home base made possible the further expansion of grain and vine cultivation.⁽¹³⁰⁾

The late eleventh and entire twelfth centuries witnessed the steady development of transhumant herding, involving the establishment of regular sheep routes (in effect, extended pastures called *cañadas*), a steady flow of royal grants permitting sheepowners to graze their flocks unrestrictedly throughout the realm, and exemptions from the payment of customs dues.⁽¹³¹⁾ This movement culminated in Alfonso X's grant of 1284 establishing the Mesta, or organization of sheepowners, as the primary regulatory instrument of the pastoral economy. It was this moment that marked the rupture between the agrarian system of the early middle ages, involving a balance between local herding, cereal farming, and wine production, and that of the later middle ages, which emphasized commercial crops and initiated a long period of agrarian dysfunction.

7. Forests and Timber

Forests in the Mediterranean world are inherently unstable. Once cut down, they regenerate only with difficulty. Under the most favorable of conditions, hardwood forests, when cut down, will be replaced by a secondary growth of pines, or scrub. If sheep and goats are grazed on the [107] stubble, conversion to a steppe-like vegetation cover is assured. The precariousness of the forest and, hence, of wood supply, imposed natural constraints upon the diffusion of wood-utilizing technologies; accounted for local shortages wherever such technologies were practiced; and imposed characteristic trading patterns (second only to wheat in its tyranny over trade routes) both within the Mediterranean basin and between it and the forested north.

In comparing the eastern and western Islamic worlds, Maurice Lombard distinguished between deforestation (*déboisement*), characteristic of the former, and clearance (*défrichement*), typical of the latter.⁽¹³²⁾ The same distinction can be applied to the Iberian peninsula, where the possibilities of regeneration of timber decreases from north to south. The progress of clearance, however, linked to agricultural and industrial development, began first in the south and only became a problem in the Christian kingdoms well after A.D. 1000, when the settlement of the plains was in full swing.

In antiquity, deforestation was mainly the result of mining and shipbuilding, the industries that made the greatest demand upon wood supply. In Spain, this affected only the forests of eastern Baetica, particularly the area around Almería, which, in Islamic times, was the site of an arsenal that had to be supplied either from inland stands or, by ship, from the Moroccan Rif. Otherwise the peninsula was still densely forested. Pines were found in the Algarve and Murcia in the south, in the mountains of Cuenca and Albarracín, in the hinterland of Tortosa, and on the island of Ibiza. The Aljarafe area of Seville was famous for acacias. Oaks were found in vast areas of Andalusia, notably at Fahs al-Ballût ("Plain of the Acorns," now Los Pedroches), a vast stand of evergreen oaks extending across mountains and high plateaux to Almadén. Oaks were also found in Algarve, Extremadura, and New Castile. To the south of the Duero lay another great sash of oak, respected by the Muslims as a strategic barrier, and the entire northern meseta was rich in kermes, evergreen, and holm oaks. The cork oak was also widely diffused, in the south of Old Castile and in al-Andalus.⁽¹³³⁾

The demands made upon timber supply by the rapid urbanization of al-Andalus (house construction, furniture, industrial fuel), by intensification of agriculture (hydraulic wheels), and by the rise of the Umayyad state to hegemony in the western Mediterranean (naval supplies) resulted in a retreat of forests from high-demand areas, the growth of wood-related [108] industries in remote mountain villages, and the establishment of bonds of economic interdependence with the North African coastal region. The area around Almería, where 'Abd al-Rahmân II established an arsenal, was supplied from the Moroccan Rif, from pine stands in the interior of the Betic cordillera, from the Balearics and from the eastern coast, where logs were floated down the Júcar and other rivers to Cullera. Entire villages in the mountains of Segura, Cazorla, and Alcaraz supported themselves by exporting wooden vessels and utensils to urban centers. The same was true of a number of places in the Algarve. Yet al-Andalus was well enough supplied with this resource to be a

major exporter of wood in the Islamic world, shipping both timber and finished products from the east and west coasts to Morocco, from which (particularly the port of Qasr al-Saghîr) timber was also imported.⁽¹³⁴⁾

In the Christian kingdoms, forests were cleared mainly for cultivation. Early settlements on the frontier were made in natural clearings and in places where the population density was light, as on the plain of Bages as late as the eleventh century, the attack on the forests was marginal in spite of the increasing pace of settlement. Royal charters were both generous in granting rights to villagers to cut wood (for fuel and for building houses) and to shepherds to cut branches for the making of corrals, fences, and other needs related to herding. But by the twelfth century, with increasing pressure upon woodland, a revaluation of the resource took place, a change in consciousness brought about by compelling economic interests. As supplies dwindled, wood became, as it had long before in the Islamic world, an object of commercialization. There was a natural current of exchange between plains and mountains, the latter supplying carts, wooden agricultural implements, and barrel staves (the charters record the frequent inclusion of *toneles* and *cubos* -- wine casks in various exchanges), in return for grain. In the Galician documents studied by Pallares and Portela the first sale of wooden products for money occurs in 1199, with mentions increasing thereafter as cultivators sought wooden containers for wheat and wine, as well as chestnut or oaken stakes for grapevines.⁽¹³⁵⁾

Not unnaturally, as wood became more valued, lords sought to protect their own sources by making them off-limits to the peasantry (by creating *defesas*, or preserves). Conservation has always begun typically as the strategy of an elite group to conserve a vital economic interest. The monastery of Cardena had a *defesa lignorum* as early as the tenth century; [109] the eleventh-century Fuero of Nájera forbade the cutting of wood in the town forest; restrictions on the communal use of forests became generalized, and by the thirteenth century alarm was widespread. Alfonso X, in the *Siete Partidas*, piously warns against those who cut down trees with "bad intention," alluding to the "great pleasure and comfort" that these afford to men when they behold them. In view of the fact that burning off of woodland was a common method of clearance used by peasants as well as by herdsmen, who believed that the ash enhanced the fertility of pasture, the Cortes of Jerez decreed in 1268 that "he who sets fire to a forest is to be thrown into it."⁽¹³⁶⁾ It is probable that aristocratic concern was able, at the expense of social justice, to ward off extensive deforestation for several hundred years, postponing the price that the Islamic world began to pay in the eleventh century.

Notes for Chapter 2

1. Compare the six maps in J. M. Houston, *The Western Mediterranean World* (Longman's, 1964), p. 199; note also Juan Martínez-Alier's critique of overly generalized wet/dry distinctions in *Labourers and Landowners in Southern Spain* (London: George Allen and Unwin, 1971), p. 25.

2. Peter H. Freeman, "The Agroecosystem: A Framework for Assessing Agricultural Production Technologies in Developing Countries," *Technology Assessment*, 2 (1974), 243.
3. Ronald Cohen and John Middleton, *From Tribe to Nation in Africa* (Scranton, Pa., 1970), p. 11.
4. Criticón, III, 9; cited by Castro, *The Spaniards*, p.119.
5. Raymond Carr, *Spain, 1808-1939* (Oxford: Clarendon Press, 1966), p. 2. In the sixteenth century, Francisco de Aldaña understood the arid nature of the peninsula and sought to relate character differences of Spaniards and Muslims to climate; see Castro, *The Spaniards*, p. 33. Apposite medieval perceptions are noted below.
6. E. Lévi-Provençal, "La 'Description de l'Espagne' d'Ahmad al-Râzi," *al-Andalus*, 18 (1953), 61-62; Elías Terés, "Textos poéticos árabes sobre Valencia," *ibid.*, 30 (1965), 292-295.
7. See the excellent discussion by James Dickie, "The Hispano-Arabic Garden: Its Philosophy and Function," *Bulletin of the School of Oriental and Asian Studies*, 31 (1968), 237-248.
8. Terés, "Textos poéticos sobre Valencia," p. 293.
9. Braudel, *The Mediterranean*, I: 237; Himyarî, *Péninsule ibérique*, p. 5 (trans.).
10. Makkî, *Aportaciones orientales*, p. 116.
11. Himyarî, *Péninsule ibérique*, p. 219 (trans.).
12. See the frequent references from Yâqût, whose entry for Seville in his encyclopedic work is found under the rubric Hims al-Andalus; Gamâl 'Abd al-Kar-im, *A1-Andalus en el "Mu'yam al-buldân" de Yâqût* (Seville: Publicaciones de la Universidad de Sevilla, 1972), pp.19 n. 12, 56, 144, 147. See also Makkî, *Aportaciones orientales*, p. 29; al-Saqundi, *Elogio del islam español*, trans. Emilio García Gómez (Madrid-Granada: Escuelas de Estudios Arabes, 1934), p. 108; *Lawrence of Arabia* (program of the Columbia Pictures film) (New York, 1962).
13. For the sake of comparison, the two texts-- stanzas 145-147 of the *Poema* and the fuller version from the *Crónica* -- may be consulted together in *Poema de Fernán González*, Alonso Zamora Vicente, ed., 4th ed. (Madrid: Espasa-Calpe, 1970), pp. 44-48.
14. See examples in Castro, *The Spaniards*, p. 227.
15. Félix Hernández Giménez, "El convencional espinazo montañoso, de orientación este-oeste, que los geógrafos árabes atribuyen a la Península Ibérica," *Al-Andalus*, 30 (1965), 201-275. Cf. the more realistic Roman view of the same range in Manuel Criado de Val, *Teoría de Castilla de Nueva*, 2nd ed. (Madrid: Gredos, 1969), p. 19.
16. Bosch Vilá, *A1barracín musulmana*, map opposite p. 36.

17. See Lévi-Provençal, "Description de l'Espagne," pp. 60-61, and commentary in Bosch Vilá, *Albarracín musulmana*, pp. 36-38.

18. Jacinto Bosch Vilá, "Aiguas consideraciones sobre al-Tagr en al-Andalus y la división politico-administrativo en la España musulmana," in *Etudes d'Orientalisme dédiées a la mémoire de Lévi-Provençal*, 2 vols. (Paris: G.-P. Maisonneuve et Larose, 1962), I: 25-36; and Lévi-Provençal, *España musulmana: Instituciones y vida social*, p. 32.

19. Bosch Vilá, "Algunas consideraciones sobre al-Takr," pp. 27-28.

20. See Maravall's critique of the received view: *Concepto de España*, pp. 139-154.

21. *Ibid.*, pp. 152-153: *in marchis eremis et in solitariis locis contra paganorum*.

22. *Ibid.*, p. 152.

23. Francisco Marsá, "Toponimia de reconquista," *Enciclopedia Lingüística Hispánica*, 2 vols. (Madrid: Consejo Superior de Investigaciones Científicas, 1960), I: 615-646; on place names derived from *râbita* and *munastîr*, Manuel Sanchis Guarner, "Las minorías religiosas en la toponimia de Cataluña, Valencia y Mallorca," *Fifth International Congress of Toponymy and Anthroponomy. Proceedings and Transactions*, 2 vols. (Salamanca, 1958), I: 471; on *atalaya*, see Eero K. Neuvonen, *Los arabismos del español en el siglo XIII* (Helsinki: Society of Finnish Literature, 1941), pp. 68-70.

24. Pierre Bonnassie, *La Catalogne du milieu du Xe à la fin du Xle siècle*, 2 vols. (Toulouse: Publications de l'Université de Toulouse-Le Mirail, 1975-1976), I: 118-128.

25. Sánchez-Albornoz, *Despoblación y repoblación del valle del Duero*; Menéndez Pidal, "Repoblación y tradición de la cuenca del Duero," *Enciclopedia Lingüística Hispánica*, I: xxxiv.

26. *Poema de Fernán González*, p. 66, stanza 222. The ratio implied of 45,000 Castilian-Leonese to around seven million Andalusis might not be far of the mark as a judgment retrospective to the tenth century.

27. Sánchez-Albornoz, *Despoblación y repoblación del valle del Duero*, p. 183.

28. *Ibid.*, p. 388: *terram de ursorum et aprorum*.

29. Dozy, *Recherches*, I: 243.

30. On the abandonment of desert themes by Andalusí poets, see Henri Pérès, *La poésie andalouse en arabe classique au Xle siècle* (Paris: Adrien-Maisonneuve, 1937), p. 228; on poetical references to *mafâza*, *ibid.*, pp. 238-239.

31. On the shift from fear to security as a function of increased population density, see Maravall, *Concepto de España*, pp. 272-276.

32. Pérès, *Poésie andalouse*, p. 188.
33. Dominique Urvoy, "Une étude sociologique des mouvements religieux dans l'Espagne musulmane de la chute du califat au milieu du XIII^e siècle," *Mélanges de la Casa de Velazquez*, 8 (1972), 247.
34. On Roman agriculture in Spain, see M. Cary, *The Geographic Background of Greek and Roman History* (Oxford: Clarendon Press, 1949), pp. 234-235 (cereal, oil, and wine exports); K. D. White, *Roman Farming* (Ithaca: Cornell University Press, 1970), particularly p. 391 (on olive production); Glick, *Irrigation and Society in Medieval Valencia*, pp. 189-190 (Roman irrigation in Valencia); and Ellen Churchill Semple, *The Geography of the Mediterranean Region: Its Relation to Ancient History* (1931), reprint ed. (New York: AMS Press, 1971), pp. 332-334 (stock rearing).
35. Jacinto Bosch Vilá, "El elemento humano norteafricano en la historia de la España musulmana," *Cuadernos de la Biblioteca Española de Tetuan*, 2 (1964), 24-25.
36. Pierre Guichard, "Le peuplement de la région de Valencia aux deux premiers siècles de la domination musulmane," *Mélanges de la Casa de Velazquez*, 5 (1969), 103-156; Jaime Oliver Asín, "En torno a los orígenes de Castilla," *A1-Andalus*, 38 (1973), 319-391. As an example of Berber tribal settlement in the Murcian huerta, see Juan Torres Fontes, *Repartimiento de la huerta y campo de Murcia en el siglo XIII* (Murcia: Academia Alfonso X el Sabio, 1971), pp. 21, 23: the Beniajan canal runs into that of Zeneta.
37. Jacques Berque, *Structures sociales du Haut Atlas* (Paris, 1955), pp. 157-159.
38. Karl A. Wittfogel, *Oriental Despotism* (New Haven: Yale University Press, 1957), pp. 214-219.
39. Bolens, "L'Eau et l'irrigation," p. 66.
40. *Ibid.*, p. 65, and, following Bolens, Watson, "Arab Agricultural Revolution." Note that Garcia de Cortázar, *Epoca medieval*, pp. 80-81, dates the intensification of huerta economies to the period 925-1008 as a result of urban demand during the Caliphate.
41. Robert Hunt, personal communication.
42. See Lombard, *Espaces et réseaux*, p. 63.
43. On surviving Arabic documentation on irrigation in al-Andalus, see, for example, Angel González Palencia, "Notas sobre el régimen de riegos de Veruela en los siglos XII y XIII," *A1-Andalus*, 10 (1945), 79-88; José María Cuelco Adrián, *La Font de la Vall de Segó* (Valencia: Publicaciones del Archivo Municipal, 1965), p. 23. On the comparative method, see Glick, *Irrigation and Society in Medieval Valencia*, pp. 213-215.
44. The Valencian system is easily accommodated to the 144-unit model; see *ibid.*, pp. 211-213.

45. See discussion in *ibid.*, p. 214, and references.

46. *Ibid.*, pp. 264–265.

47. Guichard, "Peuplement de la région de Valencia," p. 125. Lévi-Provençal inexplicably associated this *sâqiyat Hawwâra* with the Mislata canal, which is on the opposite side of the river; "La toma de Valencia por el Cid," *Al-Andalus*, 13 (1948), 147. My derivation of Favara from Arabic *fauwâra*, "spring" (*Irrigation and Society in Medieval Valencia*, p. 228), is erroneous.

48. See n. 36 above and Glick, *Irrigation and Society in Medieval Valencia*, pp. 361 n. 26, 164.

49. Guichard, "Peuplement de la région de Valencia," p. 124.

50. Ambrosio Huici Miranda, *Historia musulmana de Valencia y su region*, 3 vols. (Valencia: Ayuntamiento, 1970), I: 149.

51. Jean Brunhes, *L'Irrigation: Ses conditions géographiques, ses modes et son organisation dans la Péninsule Ibérique et dans l'Afrique du Nord* (Paris: C. Naud, 1902).

52. W. Y. Adams, "Post Pharaonic Nubia in the Light of Archaeology," *Journal of Egyptian Archaeology*, 50 (1964), 119; cited by Thorkild Schioler, *Roman and Islamic Water-Lifting Wheels* (Copenhagen: Odense University Press, 1973), p. 108. See the discussion of the *noria* in Chapter 7, section 5(a), below.

53. Glick, *Irrigation and Society in Medieval Valencia*, p. 178; Bolens, "L'Eau et l'irrigation," p. 66; al-Saundi, *Elogio del Islam español*, p. 105.

54. José M. Millás Vallicrosa, *La ciencia geopónica entre los autores hispano-árabes* (Madrid: Consejo Superior de Investigaciones Científicas, 1954), p. 42: *alfilâha al-hindiyya*.

55. Watson, "Arab Agricultural Revolution," pp. 11, 14; Bolens, "L'Eau et l'irrigation."

56. Millás Vallicrosa, "Sobre la obra de agriculture de Ibn Bassâl," in *Nuevos estudios sobre historia de la ciencia española* (Barcelona: Consejo Superior de Investigaciones Científicas, 1960), pp. 139–140; *idem*, "El cultivo del algodón en la España árabe," *ibid.*, p. 177.

57. Bolens, "L'Eau et l'irrigation," p. 72; J. Humlum, "Asiatiske voldingssystem i sydspanske kunstvandingsagerbrug," *Kulturgeografi*, 7 (1967–1969), 451–461.

58. Watson, "Arab Agricultural Revolution," pp. 30–31; Makkî, *Aportaciones orientales*, pp. 44 n. 3, 50; al-Khushanî, *Historia de los jueces de Córdoba*, Julián Ribera, trans. (Madrid: Aguilar, 1965), pp. 176–177; EI², II: 1038. The *doñegal* passage is in Emilio García Gómez, "Sobre agriculture arábigoandaluza. Cuestiones biobibliográficas," *Al-Andalus*, 10 (1945), 134 (my translation).

59. Watson, "Arab Agricultural Revolution," pp. 30–31; Bolens, "L'Eau et l'irrigation," p. 76.

60. Millás Vallicrosa, "Cultivo del algodón," pp. 174, 177; al-Himyarî, *Péninsule ibérique*, p. 27.

61. On the irrigation of figs, see Torres Fontes, *Repartimiento de la huerta y campo de Murcia*, p. 44: *un higueral sobre la acequia*. On the irrigation of vineyards, Glick, *Irrigation and Society in Medieval Valencia*, pp. 246–247.

62. Robert S. Smith, "Medieval Agrarian Society in its Prime: Spain," in *The Cambridge Economic History of Europe*, vol. I, 2nd ed. (Cambridge: Cambridge University Press, 1966), p. 442; Rafaela Castrillo Márquez, "Descripción de al-Andalus según un ms. de la Biblioteca de Palacio," *Al-Andalus*, 34 (1969), 88, and the related version in al-Himyarî, *Péninsule ibérique*, p. 27; Lévi-Provençal, *España musulmana: Instituciones y vida social*, pp. 155–157; al-Saqundi, *Elogio del Islam español*, p. 97; Julio González, *Repartimiento de Sevilla*, 2 vols. (Madrid: Consejo Superior de Investigaciones Científicas, 1951), I: 446–448; Salvador Rodríguez Becerra, *Etnografía de la vivienda: El Aljarale de Sevilla* (Seville: Publicaciones del Seminario de Antropología Americana, 1973), p. 51; S. M. Imamuddin, *Some Aspects of the Socio-Economic and Cultural History of Muslim Spain, 711-1492 A.D.* (Leiden: E. J. Brill, 1965), p. 84.

63. *Le Calendrier de Cordoue*, new ed., Ch. Pellat, ed. (Leiden: E. J. Brill, 1961), p. 60 n. 3; Lévi-Provençal, *España musulmana: Instituciones y vida social*, p. 165; Castrillo Márquez, "Descripción de al-Andalus," p. 95; al-Saqundi, *Elogio del Islam español*, p. 97; R. Dozy, *Supplément aux Dictionnaires Arabes*, 2nd ed., 2 vols. (Leiden: E. J. Brill, 1927), 1:156, 862; Millás Vallicrosa, "Sobre la obra de agriculture de Ibn Bassâl," p. 150. Himyarî mentions figs in Aljarafe, Calatayud, Coria, Denia, Hornachuelos, Jerez, Málaga, Murcia, and Santa Maria.

64. E. Ashtor, "Essai sur l'alimentation des diverses classes sociales dans l'orient médiéval," *Annales*, 23 (1968), 1039; González, *Repartimiento de Sevilla*, I: 449; Makkî, *Aportaciones orientales*, pp. 108, 181, 184, 186; al-Saqundi, *Elogio del Islam español*, pp. 106, 110; Lévi-Provençal, *España musulmana: Instituciones y vida social*, p. 159 n. 120.

65. On varieties of cereals, see Lévi-Provençal, *España musulmana: Instituciones y vida social*, p. 154; on the introduction of hard wheat, *Cambridge Economic History*, I: 160; on rye, Pedro Chalmeta Gendrán, "El 'Kitâb fî âdâb al-hisba' (Libro del buen gobierno del zoco) de al-Saqatî," *Al-Andalus*, 33 (1968), 147 n. 3; on heat resistance and storage, Watson, "Arab Agricultural Revolution," pp. 15–16. Also on storage, see Bolens, "L'Eau et l'irrigation," p. 69, and Lévi-Provençal, *op. cit.*, p. 153.

66. Lévi-Provençal, *España musulmana: Instituciones y vida social*, pp. 153–154; Imamuddin, *Socio-Economic and Cultural History*, Pp. 83; al-Saqundi, *Elogio del Islam español*, p. 106 (on the *campiña* of Córdoba). On Cartagena, Castrillo Márquez, "Descripción de al-Andalus," p. 99; on Fahs Qâmara, Chalmeta, "El 'Kitâb fî âdâb al-hisba,'" *Al-Andalus*, 33 (1968), 158 n. 4; on Valencian wheat, Robert I. Burns, *Islam under the Crusaders: Colonial Survival in the Thirteenth-Century Kingdom of Valencia* (Princeton: Princeton University Press, 1973), pp. 106–107.

67. M. Rodinson, "Ghidha'," EI², II: 1063; Lombard, *L'Islam*, p. 164; Lévi-Provençal, *España musulmana: Instituciones y vida social*, p. 153.

68. Ibn Khaldûn, *Muqaddimah*, I: 177, 180; II: 269.

69. Millás Vallicrosa, "Sobre la obra de agriculture de Ibn Bassâl," p. 143; ibn Bassâl, *Libro de agricultura*, José M. Millás Vallicrosa and Mohamed Aziman, eds. (Tetuan: Instituto Muley el-Hasan, 1955), pp. 142-144 (trans.). Ashtor notes that the main change in the cereal diet effected by Muslim expansion was the introduction of rice; "Essai sur l'alimentation," p. 1018.

70. Hellmuth Hopfner, "La evolución de los bosques de Castilla la Vieja en tiempos históricos," *Estudios Geográficos*, 115 (1954), 422; Salustiano Moreta Velayos, *El monasterio de San Pedro de Cardena: Historia de un dominio monástico castellano (902-1338)* (Salamanca: Universidad, 1971), p. 29; S. D. Goitein, *Jews and Arabs* (New York: Schocken, 1964), p. 120.

71. Sánchez-Albornoz, "Repoblación del reino asturleonés," p. 351.

72. Thus *presa* is typically found in the meaning of diversion dam, rather than the Arabism *azud*; *recum* or *aqueductum* for canal, instead of *acequia*. For examples in documents of the tenth and eleventh centuries, see Rodríguez Fernández, *Monasterio de Ardón*, pp. 221, 234, 253, and Maria del Pilar Yáñez Cifuentes, *El monasterio de Santiago de León* (León-Barcelona: Centro de Estudios e Investigación San Isidoro, 1972), p. 246. See also the discussion of dam terminology below, Chapter 7, section 3(b).

73. Juan Vernet, "Toponimia árabe," *Enciclopedia Lingüística Hispánica*, I:568.

74. See R. Brunschvig, "Ba'l," EI², I: 968-969; and al-Mâwardi, *Statuts gouvernementaux*, especially p. 314. Mâwardi distinguishes between land watered only by precipitation (*'idhy*) and that watered only by the humidity retained in the soil (*ba'l*); the usual distinction was more broadly cast.

75. Makkî, *Aportaciones orientales*, p. 164.

76. García de Cortázar, *Epoca medieval*, p. 75.

77. García de Cortázar, *San Millán de la Cogolla*, p. 247, sums up this series of changes admirably.

78. María del Carmen Carlé, "Migraciones de corto radio," *Cuadernos de Historia de España*, 49-50 (1969), 117; Jesús García Fernández, "Campos abiertos y campos cercados en Castilla la Vieja," in *Homenaje al Excmo. Sr. D. Amado Melón y Ruiz de Gordejuela* (Zaragoza: Consejo Superior de Investigaciones Científicas, 1966), p. 125 n. 39, citing E. Gimeno, "La población de Soria y su término en 1270," *Estudios Geográficos* (1958), 487-512.

79. García de Cortázar, *San Millán de la Cogolla*, pp. 84-85.

80. García Fernández, "Campos abiertos y campos cercados," p. 125; García de Cortázar, *Epoca medieval*, p. 207; *La reconquista española y la repoblación del país* (Zaragoza: Consejo Superior de Investigaciones Científicas, 1951), p. 190; Lynn H. Nelson, "Land Use in Early Aragón: The Organization of a Medieval Society," *Societas*, 3 (1973), 123. Note Nelson's conclusion (p. 126) that dispersion of settlement in the mountains was a response not to population pressure but to a competitive economic situation where each nucleus of settlement had to ensure as much production of winter fodder as possible.

81. Rodríguez Fernández, *Monasterio de Ardón*, P. 114; Sánchez-Albornoz, "Repoblación del reino asturleonés," p. 415.

82. Sánchez-Albornoz, *Despoblación y repoblación del valle del Duero*, p. 298; García de Cortázar, *San Millán de la Cogolla*, p. 104; Rodríguez Fernández, *Monasterio de Ardón*, p. 215 (document of 952). On new roads, see García de Cortázar, *op.cit.*, p. 151. For citation of a vineyard located on a new road (*vinea super viam novam*) indicative of the monastery's need to transport its grape harvest, see Luciano Serrano, *Cartulario de San Millán de la Cogolla* (Madrid: Centro de Estudios Históricos, 1930), p. 98.

83. Ignacio de la Concha, *La presura* (Madrid: Consejo Superior de Investigaciones Científicas, 1946), p. 20.

84. Sánchez-Albornoz, *Despoblación y repoblación del valle del Duero*, pp. 183 (drought), 243 (perambulations, e.g., *illo monte, illa aqua, illa lonte, per illos collos*, etc.).

85. *Ibid.*, pp. 125, 215, 259; R. Menéndez Pidal, "Repoblación y tradición de la cuenca del Duero," xxx; García de Cortázar, *San Millán de la Cogolla*, P. 102, and *idem*, *Epoca medieval*, pp. 136, 149.

86. Sánchez-Albornoz, "Repoblación del reino asturleonés," pp. 236, 262 n. 5; Reyna Pastor de Togneri, *Conflictos sociales y estancamiento económico en la España medieval* (Barcelona: Ariel, 1973), p. 186; Moreta, *San Pedro de Cardeña*, pp. 34, 35, 40, 60; García de Cortázar, *San Millán de la Cogolla*, p. 133.

87. See de la Concha, *Presura*, *passim*, but especially pp. 119, 123, 137; and *La reconquista española y la repoblación del país*, p. 212.

88. Serrano, *Cartulario de San Millán*, p. 2; García de Cortázar, *San Millán de la Cogolla*, p. 284 n. 155; and de la Concha, *Presura*, p. 44 n. 68.

89. On the importance of clerics in the process of settlement, see Sánchez-Albornoz, "Repoblación del reino asturleonés," p. 252; Moreta, *San Pedro de Cardeña*, P. 50; and Yáñez, *Monasterio de Santiago de León*, p. 74.

90. On the settlement of Mozarabs in León, see Sánchez-Albornoz, *Despoblación y repoblación del valle del Duero*, p. 271, and *idem*, "Repoblación del reino asturleonés," pp. 348-352; *La reconquista española y la repoblación del país*, p. 158; Rodríguez Fernández,

Monasterio de Ardón, especially pp. 91, 165, 168; and M. Gómez-Moreno, *Iglesias mozárabes: Arte español de los siglos IX a XI* (Madrid: Centro de Estudios Históricos, 1919), p. 121.

91. Rodríguez Fernández, *Monasterio de Ardón*, p.117; Sánchez-Albornoz, *Despoblación y repoblación del valle del Duero*, pp. 341, 403; *idem*, "Repoblación del reino asturleonés," pp. 304, 318; Moreta, *San Pedro de Cardeña*, p. 179.

92. On short-range migrations, Carlé, "Migraciones de corto radio," pp. 117-134, and Sánchez-Albornoz, "Repoblación del reino asturleonés," p. 316. On cheapness of land, *ibid.*, pp. 386-387, and Yáñez, *Monasterio de Santiago de León*, p. 126.

93. Bonnassie, *La Catalogne*, I: 426-437.

94. See summary by Archibald R. Lewis, *The Development of Southern French and Catalan Society, 718-1050* (Austin: University of Texas Press, 1965), pp. 70-73; and García de Cortázar, *Epoca medieval*, pp. 136, 149.

95. Bonnassie, *La Catalogne*, I: 440-445; de la Concha, *Presura*, pp. 25 n. 45, 51 n. 78.

96. García de Cortázar, *Epoca medieval*, pp. 234, 239; *idem*, *San Millán de la Cogolla*, p. 145.

97. On mills, see Jean Gautier-Dalché, "Moulin A eau, seigneurie, communauté rurale dans le nord de l'Espagne (IXe-XIIe siècles)," in *Etudes de Civilisation Médiévale. Mélanges offerts à Edmond-René Labande* (Poitiers: C.E.S.C.M., 1974), pp. 337-349; Sánchez-Albornoz, "Repoblación del reino asturleonés," pp. 379-380 n. 19, and *idem*, *Investigaciones y documentos sobre las instituciones hispanas* (Santiago: Editorial Jurídica de Chile, 1970), pp. 183-184 n. 16; García de Cortázar, *San Millán de la Cogolla*, pp. 88, 123, 158; Bonnassie, *La Catalogne*, I: 459-464. On the social organization of milling, see Chapter 5, below, and on technological aspects, Chapter 7, section 4(a).

98. García Fernández, "Campos abiertos y campos cercados," p. 119; Moreta, *San Pedro de Cardeña*, p. 160 (eleventh century); García de Cortázar, *San Millán de la Cogolla*, p. 289 (twelfth century).

99. On field systems, see García Fernández, "Campos abiertos y campos cercados"; García de Cortázar, *San Millán de la Cogolla*, pp. 287, 298; and Pastor, *Conflictos sociales*, pp. 212-213, 216.

100. On yields, see García de Cortázar, *San Millán de la Cogolla*, p. 288; *idem*, *Epoca medieval*, p. 241; and B. H. Slicher van Bath, *The Agrarian History of Western Europe, A.D. 500-1850* (London: Edward Arnold, 1963), p. 172.

101. On varieties of cereals grown, see *Poema de Fernán González*, stanza 234; Maria del Carmen Pallares Mendez and Ermelindo Portela Silva, *El bajo valle del Miño en los siglos XII y XIII. Economía agraria y estructura social* (Santiago de Compostela: Universidad, 1971), p. 46; Sánchez-Albornoz, *Estampas de vida en León*, p. 28 n. 49; Moreta, *San Pedro de Cardeña*, p. 63; García de Cortázar, *San Millán de la Cogolla*, p. 286, and *idem*, *Epoca medieval*, p. 240.

102. On *herrenales*, see García Fernández, "Campos abiertos y campos cercados," p.127; Bonnassie, *La Catalogne*, I: 470. On oats, *ibid.*, I: 471; it is possible that horses were used for plowing by the early twelfth century, but there is little direct evidence. On rotations in Galicia, Pallares and Portela, *Bajo valle del Miño*, pp. 47-48.

103. See García de Cortázar, *San Millán de la Cogolla*, pp. 93, 290-291, 294, and *idem*, *Epoca medieval*, pp. 231, 240.

104. José Mattoso, *Le monachisme ibérique à Cluny: Les monastères du diocèse de Porto de l'an mille a 1200* (Louvain: Université, 1968), p. 264.

105. Bonnassie, *La Catalogne*, I: 446-448, 450; García de Cortázar, *San Millán de la Cogolla*, p. 284; Yáñez, *Monasterio de Santiago de León*, p. 75; Moreta, *San Pedro de Cardena*, pp. 65, 189.

106. Ubieto, *Ciclos económicos*, p. 81.

107. Mattoso, *Monachisme ibérique*, p. 266; *Poema de Fernán González*, p. 135; Moreta, *San Pedro de Cardena*, p. 66; Bonnassie, *La Catalogne*, I: 456-457; García Fernández, "Campos abiertos y campos cercados," p. 126; Pallares and Portela, *Bajo valle del Miño*, p. 52.

108. Sánchez-Albornoz, *Estampas de vida en León*, p. 33; *La reconquista española y la repoblación del país*, p. 158; Bonnassie, *La Catalogne*, I: 457, 459. There was a *barrio de olivares* in Zamora; Armando Represa, "Genesis y evolución urbana de la Zamora medieval," *Hispania*, 32 (1972), 542 n. 31.

109. Maravall, *Concepto de España*, pp. 160-161.

110. Sánchez-Albornoz, "Repoblación del reino asturleonés," p. 381.

111. Tomás Muñoz y Romero, *Colección de fueros municipales y cartas pueblas* (Madrid: Alonso, 1847), p. 339: *Et ubicumque potuerint invenire aquas per rigare pecas, et vineas, sive per molinos, vel ad ortos, sive ubicumque opus habuerint, accipiant eas*. Although I agree with Jesús Lalinde Abadía that the public character of water inherited from Roman law tended to become increasingly eroded, leading in the later middle ages to a pronounced trend towards privatization and patrimonialization, I cannot follow his argument that water when included as an appurtenance to private property remained, in the period here under consideration, essentially public (to enhance settlement), even though it was often the object of patrimonialization; "La consideración jurídica de las aguas en el derecho medieval hispánico," *Anales de la Universidad de la Laguna. Facultad de Derecho*, 6 (1968-1969), 43-93, especially p. 50.

112. Armando Represa, "Evolución urbana de León en los siglos XI-XIII," *Archivos Leoneses*, 23 (1969), 267 n. 64; Sánchez-Albornoz, "Repoblación del reino asturleonés," pp. 281 n. 12, 295 n. 46; Rodríguez Fernández, *Monasterio de Ardón*, p. 96 (in this latter case the point was moot, because it was shown that the downstream mill did not, in fact, prejudice the monks' rights; if it had there is no doubt that the monastery would have prevailed).

113. Moreta, *San Pedro de Cardena*, pp. 47-48, 165-166, 201.
114. The distinction is made by García de Cortázar, *Epoca medieval*, p. 242.
115. Bonnassie, *La Catalogne*, pp. 461-469.
116. García de Cortázar, *San Millán de la Cogolla*, pp. 113, 134, 285; *idem*, *Epocamedieval*, p. 381; García Fernández, "Campos abiertos y campos cercados," p. 119.
117. On the Ebro, *La reconquista española y la repoblación del país*, p. 67; on Valencia, Glick, *Irrigation and Society in Medieval Valencia*, p. 231; on Aragonese settlement policy and comparison with Castilian policy, Juan Torres Fontes, "Jaime I y Alfonso X, dos criterios de repoblación," *VII Congreso de Historia de la Corona de Aragón*, 3 vols. (Barcelona, 1962), II: 329-340; on Murcia, *idem*, *Repartimiento de la huerta y Campo de Murcia*, *passim*; on significance of the capture of Baeza, Ubieto, *Ciclos económicos*, pp. 134-135.
118. J. M. Lacarra, "Documentos para la reconquista del valle del Ebro," *Estudios de Edad Media de la Corona de Aragón*, 3 (1947-1948), 507-508; Glick, *Irrigation and Society in Medieval Valencia*, pp. 233-234.
119. Enrique Mut Remola, *La vida económica en Lérida de 11540o a 1500* (Lérida: Instituto de Estudios Ilerdenses, 1953), pp. 84-85, 237-238. On the question of Christian misapprehension of irrigation service charges, see Robert I. Burns, "Irrigation Taxes in Early Mudéjar Valencia," *Speculum*, 44 (1969), 560-567; except for a reference to Jaca (p. 563 n. 12) all evidence that the tax in question (the *alfarda*) was an irrigation tax is inferential. See Burns's further elaboration of this issue in *Medieval Colonialism: Postcrusade Exploitation of Islamic Valencia* (Princeton: Princeton University Press, 1975), pp. 121-137.
120. Reyna Pastor, "Poblamiento, frontera y estructura agraria en Castilla la Nueva (1085-1230)," *Cuadernos de Historia de España*, 47-48 (1968), 171-220.
121. Ubieto, *Ciclos económicos*, pp. 134-135; González, *Repartimiento de Sevilla*, I: 444.
122. Torres Fontes, *Repartimiento de la huerta y campo de Murcia*, pp. 12, 42, 43-45, 47, 70-71.
123. See below, p. 349 n. 43.
124. Compare the relative frequency of lamb, mutton, and sheep recipes in the thirteenth-century "Hispano-Magribi" cookbook, translated by A. Huici Miranda: *Traducción española de un manuscrito anónimo del siglo XIII sobre la cocina hispano-magribi* (Madrid: Ayuntamiento de Valencia, 1966), *passim*, with the extremely low incidence of mutton-eating in sixteenth-century Spain, cited by Julius Klein, *The Mesta*, reprint ed. (Port Washington, N.Y.: Kennikat Press, 1964), p. 26.
125. Al-Himyarî, *Péninsule ibérique*, p. 160 (trans.); Pierre Guichard, *Al-Andalus: Estructura antropológica de una sociedad islámica en occidente* (Barcelona: Barral, 1976), p. 405; Klein, *Mesta*, p. 5 n. 2; Oliver Asín, "En torno a los orígenes de Castilla," pp. 349-374.

126. According to L. P. Harvey, Extremadura is not related to the Duero River but is derived from *estremarse*, to be separated off, to be sent on a transhumant migration (a meaning common both to Castilian and to Catalan), yielding the particle stem *estremad-*, which, with the suffix *-ura* added, gives the sense of "place to which cattle and sheep are sent on transhumance" (personal communication). On pastoral politics, see García de Cortázar, *Epoca medieval*, p. 235; *idem*, *San Millán de la Cogolla*, pp. 263, 265, 302; Nelson, "Land Use in Early Aragón," p. 127; and Klein, *Mesta*, pp. 32, 150.

127. Klein, *Mesta*, pp. 167-168. For this discussion of the permeability of the frontier by herders, I have relied upon an invaluable discussion with Professor Lynn Nelson.

128. Klein, *Mesta*, pp. 166 n. 2; 309 n. 3.

129. Sánchez-Albornoz, "Repoblación del reino asturleonés," p. 399; García de Cortázar, *San Millán de la Cogolla*, p. 165; Pallares and Portela, *Bajo Valle del Miña*, pp. 40-41.

130. See Pastor, *Conflictos sociales*, p. 191, and García de Cortázar, *San Millán de la Cogolla*, p. 262. For transhumance in Catalonia, see Eufemià Fort i Cogul, *El senyoriu de Santes Creus* (Barcelona: Fundació Salvador Vives Casajuana, 1972), pp. 441-447, and refs.

131. Klein, *Mesta*, pp. 18, 168.

132. Lombard, *Espaces et réseaux*, p. 219.

133. *Ibid.*, pp. 123, 125, 126; Hopfner, "Evolución de los bosques," pp. 416, 423; Jaime Oliver Asíí, "Quercus en la España musulmana," *Al-Andalus*, 24 (1959), 127; Pérès, *Poésie andalouse*, p. 141; Bosch Vilá, *Albarracín musulmana*, p. 50; Torres Fontes, *Repartimiento de la huerta y campo de Murcia*, p. 45; EI², II: 744.

134. See Lombard, "Arsenaux et bois de marine dans la Méditerranée musulmane: VIIe-XIe siècles," in *La navire et l'économie maritime du moyen âge au XVIIIe siècle* (Paris: SEVPEN, 1958), pp. 53-106 (reprinted in *Espaces et réseaux*, pp. 107-151) and *idem*, "Le bois dans la Méditerranée musulmane: VIIe-XIe siècles. Un problème cartographique," *Annales*, 114 (1959), 234-254 (*Espaces et réseaux*, pp. 153-176).

135. José E. Ruiz Domenec, "Una etapa en la ocupación del suelo: La roturación de tierras en la Cataluña vieja durante el siglo XI," *Hispania*, 33 (1973), 503-504; Serrano, *Cartulario de San Millán*, no. 310; Klein, *Mesta*, p. 306; García Fernández, "Campos abiertos y campos cercados," p. 119; Pallares and Portela, *Bajo valle del Miña*, pp. 35-37.

136. Moreta, *San Pedro de Cardena*, p. 71; Muñoz, *Colección de fueros*, p. 291; García de Cortázar, *San Millán de la Cogolla*, p. 272; *Siete Partidas*, 7.15.28; Klein, *Mesta*, p. 307. See also María del Carmen Carlé, "El bosque en la edad media (Asturias, León, Castilla)," *Cuadernos de Historia de España*, 59-60 (1976), 297-374, which appeared too recently for use in this book.

URBANIZATION AND COMMERCE

1. Urban Structure, Urban Functions

[110] The growth and role of cities in the two cultures of medieval Spain are intimately related to, if not dependent upon, the development of the agrarian economics just described. The conventional wisdom, perhaps, is to ascribe minimal morphological characteristics inhering in an urban nucleus, as Alfonso the Wise did: a city was "that whole place which is surrounded by walls, with the quarters and buildings contained within them."⁽¹⁾ Accepting this definition, and the implicit high density of population with respect to the surrounding countryside, historians have had no difficulty in contrasting the high level of urbanization of al-Andalus with the near total lack of towns in Christian Spain prior to A.D. 1000, after which date urban nuclei appear and follow a "normal" pattern of morphological and institutional development in common with other European societies. In such a view, one could not treat comparatively urbanization in the Umayyad and Christian states prior to A.D. 1000 because of the lack of "cities" in the latter.

A comparative approach demands an expansion of analytical frameworks, beginning with an understanding that urban functions are not necessarily dependent on urban forms (that is, on those physical structures and material elements deemed essential to a minimal definition of a city). Such functions include coordination (political and judicial administration, for example), exchange of goods or information, and the transfer of surpluses from a rural hinterland to a central point. The crux of the difference between Islamic and Christian society before A.D. 1000 is that in the former these functions were concentrated, while in the latter they were dispersed. Thus, for example, administration of justice was concentrated in the towns in al-Andalus, while in the Christian kingdoms it was dispersed among a multiplicity of lay and ecclesiastical courts throughout the countryside.

The discrepancy in scale between the two societies should not obscure the identification of analogous processes. A very small number of persons (the inhabitants of an abbey, the "household" of a count) could discharge [111] all minimal urban functions. Thus a tenth-century Castilian or Catalan monastery could well act as a node of an information network (through its *scriptorium*), as an administrative center for a populous domain, as a locus of technological innovation and technical services, and as coordinator of a regional economy and center of exchange. Indeed, early medieval monasteries tended to be located at transit points between the mountains and the plains, where they could effectively carry out these very functions. Then, as towns proper began to take form, the same monasteries quite easily adapted by shifting some of these functions into an urban setting, as when the Count of Castile granted the monastery of Cardena two stores in Burgos in 982, ostensibly for the sale of agricultural surpluses. In the eleventh century, when urbanization as a process

became generalized in Castile, Cardena even expanded and intensified its urban functions: it was granted the right to hold markets freely throughout its domains, even as the monarch was granting similar privileges to towns.⁽²⁾

Seen in this light, it is impossible (and probably a distortion) to separate urbanization as a process from the general development of networks (mainly economic) of communication.

With this proviso, some general statements can be made about the course of urbanization in early medieval Iberia. In al-Andalus towns developed quickly, beginning in the late eighth century, as a result of the emplacement of the region in the international trade network of the Islamic Empire. The international market encouraged concentration of artisan industries in towns whose monetary economy allowed the urban middle class to buy into the surrounding countryside and to develop the tightly interdependent town-huerta complexes whose agricultural surpluses further accelerated urban economic and demographic growth. In Christian Spain, both agricultural surpluses and urban functions were dispersed. A general movement of concentration can be first detected in the last third of the tenth century, gathering momentum in the eleventh owing to the economic growth that was produced by the stimulation of trade and concurrent commercialization of natural resources associated with the pilgrimage to Santiago de Compostela, as well as by the economic stimulus provided by the payment by the Taifa kings of vast sums of money in tribute.

This early urbanization, especially in Castile and León was marked by a strong influence of Islamic forms, perhaps through the emulation of the most obvious and visible model, perhaps also through the transfer of [112] perceptions and organizing principles by migrant Mozarabs. Symbolic of this process was the diffusion of the Arabic name for city -- *madīna* - - whose significance as an indicator of the urban revival in Castile has been stressed by Jaime Oliver Asín. This term appears in areas never occupied by the Muslims: Medina del Pomar (the *Madīnat Qastīliya* referred to by medieval Arab geographers) in Old Castile and the more surprising incidence of the term in the Basque country (towns with hybrid names: Medinaveitia, Medinagoitia, Medinazcoitia), where Medina seems to have connotated a walled town with a citadel, probably also the site of a market or fair. Related to the usage of Medina was the diffusion of the Arabism *azogue* (from *sāq*) and its diffusion in the Basque language (including Socoa, near St. Jean de Luz, France) in the forms *azoga* and *asoka*.⁽³⁾

Both the urban function in general and the economic function of the town seem, in very early times, to have borne Islamic connotations. The same is true of morphological characteristics of early Castilian towns: both of the common terms for quarter/suburb (used interchangeably) were Arabisms: *arrabal* (from *rabad*, suburb) and *barrio* (from *barri*, outside of). The same is true of terms relating to the immediate hinterlands of towns: *alfoz* (from *hawz*, district), indicating the immediate rural environs controlled by a town (synonymous with Romance *término*) and *aldea* (from *dai'a*, country estate or hamlet), indicating in Spanish usage an agglomeration intermediate between a hamlet and town, frequently applied to satellite villages which were jurisdictionally and economically dependent on a town. These terms were diffused by a variety of mechanisms and agents: by Mozarab and Christian Berber settlers, or by the emulation of Andalusí styles.

A whole other set of terms suggests the development of Christian cities of a later period (beginning in the tenth century and gathering force in the eleventh) parallel to that of Western European towns. Such terms (e.g., *burgo*) almost invariably occur in areas either located along the pilgrimage route or manifesting strong French influence.⁽⁴⁾

Although the sequence in the appearance of the names of the constituent parts of cities is significant (the Arabisms became common a century earlier), the mixture of the two sets of terms and the insistence by institutional historians on the significance of the *burgum* in the formation of towns raises the issue of what is viewed as normative. To an institutional historian trained in the German historiographical tradition, the *burgum* is the norm and the fact that a suburb, a quarter, a permanent market, or a rural district [113] may be known by an Arabism seems adventitious -- a name and nothing more. I prefer to think that names of institutions are not adventitious, but, at the very least, represent perceptions. In the milieu of the early medieval Christian realms, the Catalan counties excepted, towns were Islamic, almost as if by definition. The model was proximate, overbearing, and compelling.

2. Growth and Morphology of Towns

The urban structure of medieval Spain was, to a large degree, built on a Roman base. Most of the major towns were located on the sites of Roman settlements and joined together in regional commercial networks whose spatial configurations were largely predetermined by the Roman road system. Thus, Córdoba, Seville, Cádiz, Toledo, Zaragoza, Valencia, and most other centers of al-Andalus had been Roman towns. However, so ruinous was the condition of most of these towns and so great their subsequent expansion in Islamic times that most of the Roman physical plant was submerged or obliterated. Indeed, al-Himyarî regarded as a great curiosity the axial disposition, so typical of Roman city planning, of the layout of Zaragoza, one of the few towns to retain any semblance of its pristine shape. The city was built on Caesar's orders, he reported, according to a cruciform plan, with four gates at the termini of the two intersecting main streets.⁽⁵⁾

It is difficult to ascertain the growth rates of Andalusí towns, especially in earlier periods. Torres Balbás' ingenious reconstruction of the demographic growth of Córdoba on the basis of the number of male worshippers who could be accommodated in the city's main mosque, the successive enlargements of which are well documented, yields the figures of 25,000 population of the capital during the reign of 'Abd al-Rahmân I (eighth century), 75,000 at the time of 'Abd al-Rahmân II (ninth century), and 100,000 in the cailphal epoch (tenth century). The latter figure correlates quite well with other calculations, based on the maximum extent of the town, although 90,000 would be a more cautious estimate of the maximum.⁽⁶⁾

The decentralization attendant upon the collapse of the Caliphate and the subsequent heightening of regional economies seem to have acted as a spur to the growth of provincial centers. Seville, the second largest town of Islamic Spain, increased in population from 52,000 in the tenth century [114] to 83,000 in the eleventh, Toledo from 28,000 to 37,000, Granada from 20,000 to 26,000, Zaragoza from 12,000 to 17,000, Valencia from 11,000 to 15,000, and Málaga from 10,000 to perhaps 20,000. Basing calculations on known commercial patterns, the disposition of Roman roads and mountain systems, one

can surmise the existence of two interconnected urban regions. The first was dominated by Córdoba, although the center of gravity shifted to Seville in the eleventh century as the old capital suffered political dislocation and displacement of population to the benefit of the 'Abbâdid capital. (I agree with J. C. Russell that the urban commercial network of southern al-Andalus included Fez, only 240 kilometers from Gibraltar, but disagree that it excluded Toledo, which had well-defined communication linkages both with the Guadiana basin and that of the Guadalquivir.) The Ebro Valley, with an agro-industrial center at Zaragoza and an important port at Tortosa, formed the nucleus of a distinct subregion, connected to the Balearic Islands and to Valencia, the latter an unimportant town in Umayyad times (possibly because of dense Berber settlement in the region) but which increased in importance and in size thereafter. The two regions were connected both by land (over the Roman road from Toledo to Zaragoza, passing through Medinaceli) and by sea (the ports of Tortosa, Palma, and Denia connecting with southern maritime termini.)⁽⁷⁾

Since the Roman base was generally submerged everywhere, Andalusí towns developed in consonance with norms common throughout the Islamic world. Their chief morphological characteristics were the centrality of the mosque and markets, the eccentric location of fortress or citadel on a high spot along the town wall, the rigid distinction between public and private space, the fragmentation of quarters, and difficulty of access to residential streets. The juxtaposition of the main mosque and markets in the town plans of the great Andalusí cities is seen archetypically in Toledo, where the public complex was located in the geographic center of the town; in Córdoba, Almería, and Málaga the main mosque was displaced for economic reasons, toward the Guadalquivir in the former and toward the seaport in the latter two. The centrality of the mosque is obvious in Seville, Valencia, and other Andalusí towns. Almería and Málaga provide examples of towns with citadels (*alcazabas*) located on high points along the town wall.

Public activities within the town walls were limited to the market-mosque area, the only part of the town endowed with squares and streets [115] broad enough to allow for public commercial and social activities. The rare street described as being a principal artery (*zuqaq al-kabîr*) would be that connecting the central nucleus with the main gates. This area was strictly non-residential and deserted at night, when it was patrolled by guards. The residential sections of the town were comprised of winding, narrow streets which followed the natural pitches and curves of the terrain in order to provide drainage (through a channel in the middle) for rain water and sewage. The sinuous character of the streets was proverbial (note the names of Streets of the Seven Windings in Córdoba, Seville, and Murcia, and one of Twelve Windings in Málaga) as was their narrowness, most no more than three meters wide, many under two, and some (in Murcia, for example) but one meter across. The pattern was complicated by numerous culs-de-sac (*durûb*; singular *darb*; Castilian *adarve*) which typically contained from eight to ten houses and which could be locked at night by a gate. The houses themselves turned their backs on the streets, having plain exteriors lacking in windows, oriented, rather, around interior patios. The structure of the family, with insistence on privacy and the seclusion of women, encouraged this complex arrangement of streets, which also had the advantages of providing security in times of civil unrest: a *darb* could be easily defended against attack by a handful of its residents. In consonance with the general lack of public space in residential areas, there

were no squares, except small ones formed adventitiously (as were the trajectories of the streets themselves) by room left over after the construction of houses.⁽⁸⁾

For reasons of security, Jews in particular tended to reside in quarters that had internal walls and gates which could be locked. Examples are the suburb of the Jews' Gate of Córdoba (*rabad bāb al-Yahūd*) and the Jews' Town (*madīnat al-Yahūd*) of Toledo, which was located along the wall, communicating with the exterior through the Jews' Gate. On the other hand, Christians seem generally (e.g., in Córdoba, Toledo, and Zaragoza) to have lived dispersed among the Muslim population, although there were two clearly defined Mozarab quarters in Valencia, a "Suburb of the Church" in Alcira, and other scattered examples of segregated Christian quarters. There were Berber quarters in Granada and Zaragoza.⁽⁹⁾

It was typical of Andalusí towns that urban life tended to spill out through the gates into surrounding huertas and suburbs (leading Torres Balbás to characterize them as "extroverted" with respect to their [116] immediate environs, as opposed to the introversion of Christian towns). Not only were the huertas, belts of irrigated parcels surrounding most Andalusí towns, closely connected with the economic life of the town, but the urban elite frequently owned country houses (*munyat*; Castilian, *almtinia*) dispersed throughout the huerta. Extramural suburbs tended to form along the most heavily traveled commercial roads leading from the town, or around palaces and military establishments; caliphal Córdoba had more than twenty. Some suburbs outgrew the original *madīnas* and were incorporated within the walls; others were unprotected and suffered attrition after the Christian conquest. Also related to the extraversion of Andalusí towns was the incidence of other extramural areas devoted to public functions: extensive cemeteries (thirteen in Córdoba), and open-air prayer and parade grounds, which added to the animated nature of life beyond the town walls. The cemeteries, interspersed with olive groves and the tombs of holy men, served a variety of non-religious functions: lovers trysted there and tanners dried their hides on graves. All this was in strict contrast to Christian Spain, where cemeteries were parochial and included within the town walls.⁽¹⁰⁾

The few new towns built by the Muslims were either palatine-administrative complexes, such as *Madīna al-Zahra'* (the residence of 'Abd al-Rahmān III) and *Madīna al-Zahira* (built by al-Mansūr), neither of which survived Berber depredations of the eleventh century. Other towns of Muslim foundation were originally fortresses, such as Calatrava or Calatayud.

Town life in the Christian kingdoms first emerged as a function of military or political necessity. This is true of León in the tenth century, when it was an administrative, ecclesiastical, and military emplacement with a small population and very little artisanal activity, as it was in Barcelona, which was administered by a viscount as military leader. The significant phase in urban development begins in the late tenth century and flowers in the eleventh as the result of economic stimulation, in the west from the commercial movement along the pilgrimage route, and in the east owing to an agricultural revolution which created the capital with which to underwrite the urbanization of Barcelona. At the same time, the collapse of Islamic strength and the successive displacement southward of the

frontier made it possible to deemphasize the military role of urban centers and to allow the mercantile element to grow to dominance.

[117] The histories of León, Zamora, and Salamanca provide examples of the shift in urban styles in response to the changing military and economic circumstances of the eleventh century. In the tenth century León had been the seat of a kingdom and a center of monastic and military activity. It had a weekly market, but its economy was limited to the exchange of agrarian products for finished goods imported from al-Andalus. There was an influx of Mozarab artisans, and one of the few permanent stores which has been documented was owned by a Mozarab. In the early eleventh century a small, exclusively commercial quarter began to form outside of the walls. This suburb attracted French and Jewish merchants and by the end of the eleventh century, thanks to the economic stimulus afforded by the pilgrimage trade, had spread out along both sides of the road to Santiago, was the site of permanent shops, and had a population of perhaps five hundred. By the 1180's the palatine town and the newer commercial suburb had fused, provoking the economic transformation of the former. The old quarter of the royal palace and the aristocratic quarter of San Isidro had, by the early thirteenth century, been invaded by smiths, tailors, shoemakers, carpenters, and other artisans who lived intermingled with aristocratic elements. The main street of the old city, on which the cathedral was located, was known by 1257 as the Street of the Ironworks (*Ferrería*). Zamora, on the Duero River, had been a predominantly defensive center in the tenth century, with a dense nucleus located around the cathedral and castle. An extramural nucleus or *burgo* began forming outside the Puerta Nueva at the intersection of three roads in the later eleventh century. As this *burgo* reached its full growth by the middle of the thirteenth century, it was combined with the old city, as a result of which the vital center of the town shifted to the site of the Puerta Nueva, which consequently became a square wherein the town council established its seat. The pattern of Salamanca's development was similar to that of Zamora. The original urban nucleus established in the tenth century as a frontier outpost was surrounded by a wall built from the remains of the old Roman wall. To the north arose a suburb-*arrabal*, which was walled in the mid-twelfth century to form a unified settlement. This expansion motivated the dislocation of the old permanent market (the *Azogue viejo*) to a more central location, now the site of the Plaza Mayor.⁽¹¹⁾

As noted in the case of León, the towns which arose along the pilgrimage route had both a markedly commercial nature as well as a tendency [118] to orient themselves along the route. The town of Santo Domingo de la Calzada provides another example of the distinctive morphological features induced by the flow of pilgrims: it was constituted by elongated quarters on each side of the road, with secondary streets running parallel to the pilgrimage route which in turn became the principal artery within the town itself.⁽¹²⁾ Other towns arose as suburbs outside of fortified *burgi* or castles (Jaca, Burgos), or near monasteries (Sahagún), but all were dominated by agglomerations of "French" artisans. Indeed Estella was established exclusively for their settlement, to enrich the kingdom of Navarre and to attract more settlers.

In the thirteenth century, particularly in the Crown of Aragón, a limited attempt was made to plan towns. Under the aegis of James I, symmetrically laid out walled towns with streets crossing at right angles and a central cathedral square were established at Castellón de la

Plana (1251), Villarreal (1274), Nules, and Almenara.⁽¹³⁾ This spurt of town planning represented both a revival of the Roman grid pattern as well as the imposition of Aristotelian norms promoting notions of regularity and symmetry which were deemed conducive to a salubrious physical context for the development of urban life. The Christian urban style was introverted with respect to town environs. Public life was contained within the walls and was spread throughout the town's quarters, which tended to form small village-like units centered around parish churches. Artisans lived in their homes, and homes were oriented towards the streets, which, perforce, reflected this less restricted use by being wider and by opening out into frequent small squares.

When the Christians captured the great towns of al-Andalus, the principal organizing features of urban life were maintained intact. Public religious and economic functions continued to be located in the center of town -- the cathedral (converted from the main mosque) and the main market adjacent to it. Lesser details were subjected to progressive change: streets were widened, blind alleys opened up, and plain facades adorned. Thirteenth-century descriptions of Valencia and Córdoba singled out *straight* streets as an anomaly worthy of mention. Alfonso the Wise ordered the widening of the main streets of Murcia, a town noted for the narrowness of its thoroughfares. The judgment of the town fathers of Lérida that the streets were "confused, dark, and dirty" may have reflected a generalized opinion among Christians regarding the unsavoriness of Muslim-built towns. On the other hand, the widening of streets may have [119] had a technological rather than an aesthetic rationale. In Richard Bulliet's view, the disorganized street plan of medieval Islamic towns was a natural result of the lack of wheeled vehicles. Carts require that streets be flat, paved, and as wide as a single axle; without carts, the Islamic town was freed from this "vehicular straitjacket" and the roads were allowed to adapt to topographic idiosyncrasies.⁽¹⁴⁾ It makes perfect sense to suggest that when the Christians occupied these towns they had to readapt them to accommodate vehicular traffic.

3. The Urban Market

The role of the market was central in the process of medieval urbanization. In form and function there appears to be an evolutionary sequence of markets, reflecting overall economic development, that runs from periodic rural markets, to periodic urban, to permanent urban, with extramural markets playing a mediating role between rural and urban economies.

Rural markets, serving as exchange points for local agricultural surpluses, lacked the artisanal exchange function of urban markets, tended to be informal and unregulated by central authorities, and therefore are relatively undocumented. Since much of rural al-Andalus was inhabited by Berbers, the existence of traditional cyclical markets, common in North Africa, can be assumed. Toponymic evidence of such markets survive in names of rural communities named for Wednesday markets: Arva, Alarba, Larva (i.e., *sûq al-arba'a*), reflected in translation in the Valencian village of Cuart (fourth [day], that is Wednesday) de Poblet. A reminiscence of a Tuesday market is found in the Old Castilian village Talatel (*al-thalâtha*) near Medina del Pomar, doubtless reflecting a Christian Berber settlement.⁽¹⁵⁾ Pedro Chalmeta concludes that, in al-Andalus, the prevalence of a money economy would have militated against rural *sûqs*, as would the relative autarchy of urban centers whose

provisions came not from rural markets but from estates owned by townsmen.⁽¹⁶⁾ In the Christian kingdoms, market privileges were granted to tiny hamlets and rural councils from the late tenth century on, as well as to lords (as in the cited case of the monastery of Cardeña) to establish markets within their domains.⁽¹⁷⁾

In both societies, extramural markets were places of transition between rural and urban economies. In al-Andalus the rural villager sold his [120] surplus in an extramural market (typically to acquire money in the event he owed taxes payable in specie), and then entered the city to buy in specialized urban markets which were found in a central location near the mosque from at least the early ninth century in the major towns.⁽¹⁸⁾

We have noted that commercial activity in early Christian towns took place in extramural market suburbs which eventually, as a result of the increasing commercial orientation of town life, became incorporated within the town proper. The market privileges of these urban agglomerations specified weekly markets. Thus the Fuero of León (1020) provided for a Wednesday market; that of Sahagún (1095) for a Monday market; that of Nájera, Thursday; and so forth.⁽¹⁹⁾

The shift, characteristic of the twelfth century, from a periodic to a permanent market, with an established location and permanent stalls or shops, was a decisive step. Here, the weight of Islamic influence was felt, particularly in León and Castile, where permanent markets were known by the Arabism *açogue* (from *sûq*), which indicated both the place itself and the concept of permanence. Therefore, the term *azogue* frequently acquired the meaning of commercial quarter, and in some cases there was a clear semantic differentiation between the Arabism, which connoted a permanent location, and the Latinism, *mercatum*, *mercado*, which still connoted a weekly market.⁽²⁰⁾

A permanent market consisted of a number of streets on which permanent shops were located; an open square where more transient activities took place; and, in larger towns, an Alcaicería, or covered market, where luxury goods were sold. There were also specialized markets, such as those for the sale of livestock (*sûq al-dawabb*, Castilianized as Zocodover), which, in Chalmers's view, was a rural market transposed in an urban setting.⁽²¹⁾ In pre-industrial cities, it was common for artisans or merchants engaged in the same trade to occupy adjacent shops, or even entire streets or quarters. Given the primitiveness of means of transportation, the market functioned more efficiently if similar trades were concentrated. Such concentration also encouraged group cohesiveness, given material form in the organization of craft guilds, and it made control over the individual crafts by public officials more feasible. Indeed, ibn 'Abdûn, author of an Andalusí treatise on market regulation, urged that the market magistrate take pains to assign neighboring booths to members of the same trade. This was the practice in Seville, ibn 'Abdûn's town, and, upon its conquest by the Christians, Ferdinand III ordered the arrangement continued.⁽²²⁾ Thus in Córdoba there was a quarter of parchment-[121]makers, one of tanners in Zaragoza, of barbers in Toledo (these quarters may have contained only one street, however). In Seville and Valencia immediately after the Christian conquest there were streets of spice vendors (*calles de Alatares*, from Arabic *'attâr*), indicating that this arrangement dated from Islamic times. Likewise, the Repartimiento of Velez Málaga enumerates twenty-five ironsmiths located on one street alone.⁽²³⁾

The earliest citations of groups of tradesmen in León, representing settlements of Mozarabic immigrants, also reflect a tendency for those practicing the same trade to settle in compact groups. In the tenth century, however, these seem to have occupied hamlets, rather than city streets. A village named Pajarejos was settled by a group of Mozarab weavers (*tiraceros*, makers of *tirâz*, a luxury cloth), and other hamlets bore the names of the trades pursued by their settlers: Macellarlos (victuallers) Olleros (potters); Torneros (turners); and Rotarios (wheelwrights).⁽²⁴⁾ Although named craft specialists -- yoke-makers, weavers, professional millers, and the like -- do appear precociously in the documentation of Mozarab settlements such as the valley of Ardón in the mid-tenth century, such artisans are cited with frequency beginning in the eleventh century, at the same time that mercantile suburbs were forming. In particular, ironsmiths appear increasingly throughout the eleventh century, both in Castile and Catalonia, and along the pilgrimage route artisans with French names practicing a wide diversity of trades were much in evidence. The Anonymous Chronicle of Sahagún records that there came to the town "from all parts of the world burghers of many trades, that is, smiths, carpenters, tailors, skinner, shoemakers, shield-makers, and men trained in divers arts." The same process occurred in Catalonia, where extramural markets were in evidence in tenth-century Barcelona and Gerona, towns which had by the late twelfth century fully developed urban markets with specialty districts devoted to the sale of meat (*macella*) and grain (*balderias*).⁽²⁵⁾

Both the market itself, as a center of exchange, and the urban artisans who produced for the market necessitated governmental control. In the Islamic world, supervision of urban economic life gave rise to a specialized body of secular, customary law and a special jurisdiction called *hisba* (literally, calculation), executed in Umayyad times by a Master of the Market (*sâhib al-sûq*) and later by a *muhtasib*, both deriving their authority from the qadi. At the heart of their duties were the probity of weights and measures and the inspection of artisan manufactures and [122] comestible produce for adulteration. Thus the *muhtasib* is typically pictured as making the rounds of the market with an assistant who carries a balance with which to certify that products sold by weight were accurately priced. If a fraudulent practice was discovered in the commission, the *muhtasib* could punish the malfesor summarily, typically by ordering the destruction of the bastardized product. The regulations, as collected in the treatises of Andulusi *muhtasibs* such as ibn 'Abdûn of Seville and al-Saqatî of Málaga, ranged from the general (prohibition of scandalous or irreligious behavior in the marketplace) to very specific (stipulation of the number and kinds of thread per unit in various kinds of cloth; proportions of raw materials permissible in products containing multiple ingredients; procedures to be used in preparation and sale of meat). This jurisdiction was ultimately of Greek inspiration, drawing upon the model of the *agoranomos*, the market inspector, and the *astynomos*, a public health official whose primary function was to maintain public space, particularly urban streets, in passable condition. The *muhtasib*, therefore, also looked into violations of what would now be called building codes, particularly as regarded the disposal of market and household refuse in the streets and the overbuilding of upper stories in such a way as to occlude the sunlight, making it impossible for muddy streets to dry. These public health functions were viewed as intimately intertwined with the functioning of the marketplace, which was the primary focus of public life, together with the mosque, over whose cleanliness and traffic the *muhtasib* also had some jurisdiction.⁽²⁶⁾

As part of the process of urbanization in the eleventh century, the *hisba* jurisdiction was quite naturally transferred to the Christian kingdoms. A zabazoque (*sāhib al-sūq*) is mentioned in the Fuero of León (1020), where the office was no doubt introduced by Mozarabs; in the twelfth century the *almotacén* (derived from *muhtasib*) appears, becoming the standard market official in Castilian and Leonese towns. In the following century, the expansion of the Crown of Aragón along the eastern coast witnessed the diffusion of the *muhtasaf* (likewise derived *muhtasib*) in large and small towns, first those captured from the Muslims and later in many, such as Barcelona, where there was no immediate Islamic model. When the heartland of Andalusia was captured in the thirteenth century, not only the office but the entire structure of urban commercial organization was taken over intact. As Pedro Chalmeta remarks, one who has read [123] both *hisba* manuals and town ordinances of Málaga, Seville, Granada, and other formerly Islamic towns, codified in the later middle ages, can nearly anticipate both the content and sequence of the latter. Chalmeta catalogues the similarity between Islamic and Christian procedures governing the weighing of meat and flour; the preparation of sausages and cooked dishes; norms governing weaving and shoe-making; and the close similarity of sanctions, particularly the loss of goods.⁽²⁷⁾

The fact that Valencian and Catalan towns produced manuals for the comportment of the *muhtasaf* and that this official seems to have enjoyed greater vitality than both its Castilian counterpart and perhaps even the original Islamic model is revealing. The Castilians appear to have borrowed, in the eleventh century, a less evolved office (i.e., the *sāhib al-sūq*) than that adopted by the Catalans two centuries later: al-Saqatî and Raymond Deslluch, first *mustasaf* of Christian Valencia, were contemporaries. Moreover, the Christian *almotacén* and *mustasaf* were not, as their Islamic model, dependent upon a higher jurisdiction for their authority, but were elected officials of the town councils, with a rather specific mandate. While Muslims were generally restrained in their control of commercial activities, Christian authorities tended to have an exaggerated horror of an unregulated market which was institutionalized in the *mustasaf*. Also, because Islamic society placed a rather low value on customary law (*'urf*) in distinction to canon law (*fiqh*), the *muhtasib* did not hold a highly valued office, while, in contrast, the *mustasaf* of Valencia was considered an important municipal dignitary on a par with judges and jurates. The tighter organization of urban life in Christian society transformed into a very effective instrument of municipal government an area of law which in the Islamic world was amorphous, ambivalent, and not highly regarded. The heightened function of *hisba* jurisdiction in Christian garb created the interesting anomaly of actually strengthening the role of *muhtasibs* of the subject Muslim communities.⁽²⁸⁾

The *muhtasib* also supervised craft guilds, through the mediation of the guild delegate, or *amîn*. In Christian Spain, guilds first arose in the early twelfth century, in response to the increasing specialization and economic power of urban artisans. In the Catalan and Valencian towns of the thirteenth century, guilds had already achieved a prominent role in urban governance and economy and the *mustasaf* was easily superimposed as a regulatory official in charge of a preexisting guild structure. He was [124] empowered to direct the election of supervisors (*veedores*) within each guild who were to report to him any evidence of fraud or malfeasance committed by a member.⁽²⁹⁾

The easy acceptance of an Islamic institutional model and its transformation into an instrument of regulation in consonance with principles quite different from those prevailing in the Islamic world is a testimony to the dominance of Islamic urban styles in Spain of the high middle ages. Moreover, it is a good example of how an institution could be diffused quite devoid of its specifically Islamic content. More important than the culture he represented, the *muhtasib* reflected a higher stage of urbanization and economic organization and his utility to the expanding Christian urban economies served an immediate and useful integrative purpose.

When Christians captured Islamic towns, the market generally remained in the same place, with its name Castilianized or Catalanized, in the forms *zoco*, *sueca*, *azuequa*, and so forth. More than just a name is represented: these market areas, such as the Azoc of Lérida at the end of the twelfth century, were the vital economic centers, often the most densely populated areas, of these towns. In most cases, the Alcaicerías were also preserved. These had generally been owned by religious trusts and became, under Christian rule, part of the royal patrimony. Thus shops in the Alcaicerías of Toledo, Cuenca, Teruel, Zaragoza, and other towns were granted out to Christian and Jewish artisans and merchants.⁽³⁰⁾

The physical form of the Islamic permanent market, its function in town life, and its governance were reflected in, and provided a direct stimulus to, the economic development of medieval Christian Spain. That development, however, although perforce related to the economic structure of al-Andalus, was the product of a complex interweaving of processes related to the international monetary system, to the development of agriculture, and to an opening toward Europe which lent a distinctive stamp to urbanization in the eleventh century.

4. Patterns of Trade and Investment

We have noted (in Chapter 1) the interdependence of the main supra-regional economies of the medieval world (the Latin West, the Byzantine Empire, the Islamic world, and the Far East) in spite of political and religious rivalries. The interdependence is basically gauged by tracking the directionality and rate of flow of gold and silver currencies and the [125] relation of these to patterns of international trade. Trade, moreover, entails an exchange between raw materials and finished products, the concentration of which further lent spatial specificity to medieval economic patterns.

In the case of medieval Iberia, therefore, one is bound to consider, first, the embeddedness of Islamic and Christian zones in supraregional systems; second, and more specifically, the dependence of Christian Spain on the monetary system of al-Andalus; and, third, the interdependence of Islamic and Christian Spain seen in the exchange of Islamic finished products for Christian raw materials, the role of money in such exchanges, and the changing patterns of these relationships as the economic structures of the two societies changed from one of gross disparity towards one of similarity.

In al-Andalus, 'Abd al-Rahmân I had introduced a silver standard, based on the *dirhem*, which may have been the immediate model for the Carolingian monetary system, diffused, in turn, to the Christian kingdoms, particularly the Catalan counties. The Andalusí

economy, monetarized by the end of the eighth century as a function of the rapid agricultural and urban development of the country, did not become bimetallic until the flow of Sudanese gold in the early tenth century allowed 'Abd al-Rahmân III to coin gold *dinars*. The apogee of the Caliphate was capitalized not only by this constant influx of gold and by tribute (in silver and slaves) from the Christian kingdoms, but by a favorable balance of trade within the Islamic world due not only to the export of artisan products (especially silk cloth) but, more importantly, by the country's role as supplier of crucial raw materials to the Magrib and the resource-poor Islamic East. The economic boom created a disparity in the standard of living between al-Andalus, on the one hand, and the East and the Magrib, on the other, reflected both in higher prices and in higher wages, the latter constituting a pole of attraction for migrating artisans and laborers. An economic decline at the end of the century was reflected in al-Manûr's raids on the Christian kingdoms, in quest of booty.

In the eleventh century, the economies of the Taifa kingdoms seem to have been minimally disturbed by the rupture of the Islamic world system. The breaking of the political unity of the Magrib and the East, particularly by the Almoravids, inhibited the flow of gold and goods eastward, but not to Spain. The strengthening of regional agricultural economies and the impetus to urbanization afforded by the political [126] fragmentation of the state encouraged regional specialization and produced a series of booms in the Taifa capitals. The currency devaluation and monetary inflation caused by the payments of massive tributes (*parias*) to the Christians seem also to have stimulated the Taifa economies, the more so since a goodly proportion of those tributes appear to have been reinvested in Islamic industries through the purchase, by the Christians, of large quantities of both raw materials and finished products, particularly luxury items such as saddlery and cloth.

In Christian Spain, progress towards the full monetarization of the economy was slow. The incidence of bartering was pronounced, especially in the western kingdoms, through the tenth century. Although Alfonso II of León had introduced a silver standard (along Carolingian lines, but doubtless more motivated by the immediate economic influence of the Andalusí *dirhem*), silver currency was preeminently a money of account, and prices quoted in silver *solidi* indicated a weight equivalence rather than an actual monetary value. The universal equivalence of one solidus to one modius of wheat or one sheep is an indication that many transactions expressed in solidi were actually effected by an exchange in kind. Thus tenth-century land transactions record payment in cloth, livestock, iron, wine, and other products which, because of the low value of superabundant land, proved effective substitutes for money.⁽³¹⁾ The controlling force of the Andalusí economy in areas where artisan crafts were underdeveloped, primitive, or non-existent, and which can be readily appreciated from the fact that an ornamented (*guadameci*) saddle, a bridle, or bit imported from al-Andalus far exceeded in value that of the horse it adorned, is also evident in exchanges in the form of gifts which played an important role in Christian Spain before the advent of a market economy. Thus in 978 count García Fernández bestowed upon the monastery of San Cosme and San Damián an impressive endowment, consisting mainly of Islamic and Byzantine cloth (the latter generally transhipped to Christian lands by Jewish merchants) -- *almoçalas*, *alfaneques*, *ganapes* (from Arabic *ajnabî*, foreign), *greciscos* (greek), "lettered altar clothes" (*sábanas literatas*, an allusion to *tirâz*, a luxury cloth embroidered with Koranic inscriptions), not to mention fifty Muslim slaves of both sexes.⁽³²⁾ Since gifts were

rarely accepted gratuitously (Sánchez-Albornoz cites the case of a Leonese abbot who granted a mill in return for an Andalusí saddle), their role in a society where monetary exchanges were infrequent [127] and confined to the circle of kings and ecclesiastical magnates cannot be underestimated. A bolt or two of Byzantine cloth in ninth-century León was worth as much as an entire hamlet, not only because of its rarity but also because of the high investment value of such items, relative to the low value of land.⁽³³⁾

Because of the lack of gold, the purchasing power of the Christians remained relatively low through the tenth century. Such gold as could be mustered was ineluctably drained away to the south for the purchase of luxury products. The eleventh century, however, was marked by a rapid reversal of the Christian economies as a result of the political upheaval in al-Andalus, of the increased agricultural productivity of newly settled lands, and, later in the century, of the influx of pilgrims to the tomb of Saint James.

The impact upon the economies of the Christian kingdoms of the massive doses of gold paid in the form of tribute, which has been studied incisively by J. M. Lacarra, was profound, although its stimulation of the economy was more indirect than direct. The *parias* were a permanent feature of the peninsular economy, from their early development by Ramón Berenger I of Barcelona in the 1040's until the Almoravid invasion of 1086. The tributes were paid regularly, often in monthly installments, and became a normal ingredient of princely budgets. The kaleidoscopic shifting of alliances between Islamic and Christian magnates of this epoch was a direct function of the amount of tribute paid. (The potentiality for the facile switching of sides can be appreciated from the sheer multiplicity of tribute arrangements: the Hûdid kingdom of Zaragoza, which had contiguous borders with Barcelona, Urgel, Pamplona, Aragón, and Castile, paid tribute to all; more distant kingdoms, such as that of Seville, tended to direct their payments and allegiances less promiscuously.)

The investment of these sums, which ran to tens of thousands of gold dinars annually from each Taifa king, was, however, frequently diverted from purely economic ends. The lion's share was reinvested in the war effort, in soldiers' pay and by construction and purchase of fortifications. Christian princes, particularly the counts of Barcelona, also used the money to consolidate their realms by buying off inherited rights of rival claimants to their patrimonial domains. Substantial amounts were donated to ecclesiastical institutions: the sum given by Alfonso VI of Castile to the French monastery of Cluny exceeded the total of that [128] foundation's annual income from rents. Tribute money financed, in great part, the building of the great works of Spanish Romanesque architecture, which might have stimulated the growth of local artisanry, as churchbuilding did in other European countries. But here the weight of superior Islamic economic organization was felt, as the new churches' needs for finely crafted cloth, glass, and finished wood, stone, or ivory products were met by purchasing these from Andalusí towns, thereby stimulating their artisan industries, even in the face of ever-mounting inflationary pressures. The most far-reaching impact of *parias* on Christian economies seems to have been that the introduction of vast quantities of gold and therefore the inception of bimetallic currency, with the widespread circulation of Andalusí gold dinars (called *mancus* in Latin), speeded up monetary circulation, causing inflation in prices of real property and salaries in those areas such as the plain of Barcelona, where the economy had already been stimulated by increased

agricultural production. People who had made good in agriculture were therefore able, through the availability of a plentiful money supply, to convert their real estate into liquid assets which could then be invested in urban property and in commercial ventures.⁽³⁴⁾

The Almoravid invasion stopped the flow of tribute just at the moment when the Christian kingdoms had become accustomed to a monetary economy. Among the repercussions of this stoppage were an immediate economic recession and a concomitant expansion of economic horizons across the Pyrenees to Europe. Social unrest in the towns along the pilgrimage route disrupted the growth of urban industries there, provoking a break in economic development. The middle decades of the twelfth century witnessed the increasing commercialization of agricultural products, particularly wool, which were sold at a multiplicity of newly established fairs which became the foci of increasingly commercial contacts with European industrial centers, particularly those of France, Flanders, Italy, and England which used raw wool. At the same time the Almoravid dinar remained the basis of the Christian monetary system, but when the king of Murcia, ibn Mardanîsh, ceased coining Almoravid-style dinars in 1170, a process was set in motion that resulted in the first coinage of gold dinars in Castile -- the *morabetinos* or *maravedis* minted by Alfonso VIII in 1175, coined in Toledo in imitation of the Almoravid dinar with a quaint Arabic inscription alluding to the Pope as *imâm* of the Catholics.⁽³⁵⁾

These trends, leading toward a fully developed market economy, [129] continued in the thirteenth century, abetted by the development of the newly conquered territory in the Andalusí heartland, by the development of urban craft industries, by the commutation of feudal dues to money payments, and by the boom in wool exports (this latter, however, with deleterious effects on the balance of the agrarian economy).

PATTERNS OF TRADE

The economic system of the medieval Islamic world was a tenuous construction whose fragility, to use Maurice Lombard's characterization, was the result of a resource base inadequate (in essential materials such as wood, iron, and other metals, as well as in water) to sustain for long the continuous expansion of an urban artisanal society. That system, at its point of maximum productivity, was the result of a carefully tuned balance of irrigation agriculture (whose natural limits placed a ceiling on the vegetable base of the diet), long-distance trade routes to make up for local resource inadequacies, and a monetary economy based on a constant afflux of gold, all combining to stimulate urban growth. When the trade routes were interrupted by the invasions of the eleventh and twelfth centuries the system was destroyed.⁽³⁶⁾ Yet, given the nature of this international economy, al-Andalus was well-positioned, by reason of its relatively rich endowment with resources in high demand in North Africa and the East (wood, metals), to derive maximum advantage from the system in its epoch of expansion, and also, because of its access to Sudanese gold, to withstand and survive the cataclysmic effects of decline.

Viewed from the rest of the Islamic world, al-Andalus was an exporter of raw materials and of finished cloth, particularly silk. We have already noted the export of agricultural products, notably olive oil and wood, the latter forging intimate patterns of exchange between the peninsula and the Magrib. Iron deposits were relatively abundant, especially to

the west of Córdoba in the Sierra Morena and in the vicinity of Seville, where the ore was strip-mined. From iron, steel was refined by an Indian crucible process, whence the generic name of steel, *hindawī* or *al-hindī* (which passed into medieval Castilian as *alfinde*); this was worked into swords and cutlery at Toledo and other towns.⁽³⁷⁾ As important as iron were copper and mercury, the former made into cast or hammered utensils and a staple of Andalusī trade, the latter mined at the old Roman site of Almadén and exported throughout the Islamic world for use in the amalgamation [130] of gold.⁽³⁸⁾ Reserving for a discussion of the transfer of technologies (Chapter 7) details concerning the most prominent craft industries, we will here note only the overwhelming importance of silk in the Andalusī export trade. Most merchants dealing in overseas trade handled silk in one form or another; silk was not just another article or trade, but a high-value commodity which was the object of capital investment. It was traded raw and worked in other countries; finished silken cloth was exported in abundant variety; and, so great was the market for this commodity, that there was even a heavy trade in inexpensive "pickups" (*iltiqāt*), cloth made from waste silk spinnings, much handled by Andalusī merchants.⁽³⁹⁾

The purchasing power exercised by al-Andalus in virtue of its high standard of living in comparison with the Islamic East was enormous. The sale of the Egyptian flax crop in the eleventh century was coordinated with the arrival of Andalusī merchants; likewise, a Jewish merchant in al-Mahdiyya reported around 1063 that brazilwood, a dyestuff that figured prominently in Andalusī trade with the East, "sells slowly unless one gets a Spaniard for it."⁽⁴⁰⁾ Such examples could be multiplied and serve only to illustrate the interdependence of the entire Islamic free-trading area in which Andalusis played a significant role.

Viewed from al-Andalus, the Islamic world was a vast emporium where finished products and highly valued raw materials could be purchased for gold. Andalusī goods were exported, of course, but it was the country's role as a consumer society that forged the primary trading linkages, particularly with the distant markets of Persia and India.

Although Arab historical and geographical writers provide some specifics on trading patterns (typically while listing the attributes of a specific town), the most cohesive description of commerce comes from Jewish sources, namely the rich collection of private commercial correspondence of Jewish merchants which survived in the Cairo Geniza. Since Jews were fully integrated in the urban commercial economy of the medieval Islamic world (often in partnership with Muslim merchants) the data contained in the Geniza papers can be taken as representative. Another source of information, scarcely tapped, is archeological, involving the identification of places of origin of surviving Islamic handicrafts, particularly ceramics.

The most proximate sphere of Andalusī commercial activities was North Africa. Morocco was both a source of raw materials (wood, alum, [131] antimony) and finished cloth; there, Andalusī merchants sold their own finished cloth (Valencian brocade, according to al-Shaqundī), as well as copper, a staple export.⁽⁴¹⁾

Throughout this period the great Moroccan towns, particularly Marrakesh and Fez, were extensions of the Andalusī urban economy. Merchants moved back and forth freely, bearing Spanish goods on camelback (a movement that increased, if anything, during the

Almoravid and Almohad epochs). Since many businesses were family operations, members of the family would be stationed in different countries to ease commercial arrangements. Since commercial contacts between Morocco and Spain were so frequent, Andalusí merchants owned houses in Moroccan towns (for example, a Jewish merchant from Almería owned a house in Fez in mid-twelfth century).⁽⁴²⁾

Until the early eleventh century, Andalusí commerce with the East was mediated through Tunisian towns -- al-Qayrawân and its port, al-Mahdiyya. Andalusí merchants stationed in Tunisia would receive Egyptian or Syrian goods there and sell them on the spot or, if the home market was judged more favorable, ship them on to Spain. Thus brazilwood sent from Egypt to Tunisia around A.D. 1000 was forwarded to al-Andalus, where it reaped a huge profit; similarly, in 1020, an Andalusí merchant elected not to sell Egyptian textiles in Tunisia but rather to send them on to Spain, where the higher market price would "provide me with sustenance." The Geniza papers also record Andalusí merchants buying pepper and flax from the East there and selling silk cloth and copper. The decision to sell in Tunisia or transship in either direction was dictated by the current market prices at the termini.⁽⁴³⁾

The Hilâlî invasions of the mid-eleventh century ended Tunisia's role as an entrepôt. Andalusí families doing business there transferred their operations eastwards, and the Egyptian trade was henceforth borne directly by ship from Alexandria to Almería or Seville. Egypt was a prime market for Andalusí products (al-Shaḡundî mentions the export of Aljarafe olive oil there) and provided the Andalusí towns with wool and flax for their textile industries, as well as dyestuffs.⁽⁴⁴⁾

Moreover, Cairo and Alexandria were themselves entrepôts for the caravan and shipping trade to Persia and Central Asia, on the one hand, and Arabia, India, and China, on the other. Andalusí merchants circulated freely throughout the Middle East: a Jewish trader from Badajoz was active in Palestine and Syria. Persia continued to supply high-quality silk textiles to the West even after the Andalusí silk industry [132] had become established. A Jewish merchant from Khurâsân accompanied his textile products personally to Seville, where he sold them.⁽⁴⁵⁾ Following the sea route to the Far East, Andalusí antimony was sold in Aden in the twelfth century, and a surprising volume of trade with India was registered, particularly in copper and bronze vessels. Not only were Indian copper washbasins (Arabic, *jafna*, whose diminutive yields the Castilian *jofaina*) imported to Spain, but broken copper, bronze, and tin vessels were sent to India, repaired, and returned. Other Indian products, such as cowrie shells, used for decoration and medicine, were imported.⁽⁴⁶⁾ Along the same route, goods from China also reached al-Andalus. Porcelain bowls discovered in excavations of the Alcazaba (citadel) of Almería and at Madîna al-Zahra' originated in Sung China and reached the West most likely through Egypt, where imitation Chinese pottery was also sold to Andalusí merchants.⁽⁴⁷⁾

Trade between al-Andalus and the Christian West seems sluggish by comparison, at least until the eleventh century, when the Spanish Christians acquired enough purchasing power to provoke substantial commercial activity. Andalusí luxury items were omnipresent in the Christian kingdoms. Documents from the Asturo-Leonese kingdom of the tenth century, perhaps reflecting Mozarab influence and tastes, are punctuated with citations of exotic

cloth and tableware: *yrake* (that is, Iraqi) crystal; a great variety of tunics with Arabic names (*almexía, algupa, adorra, moffarrex, mutebag*), table- or altar-cloths (*almuzalla, fazale, barragán, mobatana*). These cloths were described with a rich vocabulary alluding to color, quality, style, or technique of manufacture which likewise reflected the variegated and complex textile industries of the Andalusí towns (e.g., various words for brocade – *alvexí, morgom* – or for styles of embroidery – *tiraz, hataní*).⁽⁴⁸⁾ By the thirteenth century, imports from al-Andalus and the wider Islamic world figured in tariff lists, such as one governing cargos shipped up the Ebro from Tortosa – cotton, sugar, Cordoban leather, copper, silk, and various dyes and spices (brazilwood, indigo, lac, cumin, and oregano).⁽⁴⁹⁾ These examples are by no means exhaustive, but merely illustrate the variety of Andalusí exports to Christian Spain, as well as the normality of this trade. In addition, al-Andalus imported slaves in large numbers from the European countries (particularly from Central Europe, where they were brought to Tortosa by Jewish slave dealers) and furs (notably that of the marten – *alfaneque* – which were shipped through Castro Urdiales or Tortosa to Zaragoza, where the hides were [133] worked and the finished products sent to Córdoba, Seville, Morocco, or to ecclesiastical and noble households in León).⁽⁵⁰⁾

The interdependence of Andalusí and Christian economies is difficult to gauge. One indication is the emergence of a fairly uniform system of weights and measures throughout the peninsula which reflects, in part, the heightened trading activities of the eleventh century and also the capture of Islamic commercial centers in the following centuries. In Alfonso X's decree of 1261 establishing standard weights and measures, Arabic terminology predominates. The maximum measure of grain was the *cafiz* of Toledo, divided into twelve *fanegas* of twelve *celemines* each. All these measures are Arabisms, as was the standard weight imposed for meat, the *arrelde* of Burgos.⁽⁵¹⁾ That the Old Castilian Burgos used measures of Arab derivation probably reflects the antiquity of the phenomenon.

Christian craft industries were relatively late in developing, partly because finished products could be purchased elsewhere with the spoils of war. Until the Almoravid invasion these purchases were largely directed toward Islamic Spain; when access was temporarily shut off, trading links were forged with the towns of Western Europe. A domestic textile industry did not emerge until the end of the twelfth century in the Castilian wool centers of Segovia and Cuenca, and in the early thirteenth century in the Aragonese towns of Jaca and Huesca. That of Barcelona, possibly the most important late medieval peninsular textile center, developed only in the mid-thirteenth century (when it produced cotton cloth – *fustanes*). This retarded development is no doubt related to the progress of the conquest and occupation of southern Spain which had the effect of destroying Muslim production centers, creating a market for northern products, and, at the same time, by the removal of the frontier southward, providing an atmosphere propitious for the channeling of productive energies into activities unrelated to war.⁽⁵²⁾

The textiles produced by the Christian towns were neither of quality high enough to satisfy the luxury market, nor of quantity sufficient to the national demand. Therefore, at the same time, French, Flemish, English, and Italian cloth was imported (French cloth typically in the Crown of Aragón, Flemish in Castile). The taste for oriental wares was satisfied both in Castile and Aragon by importing cloth directly from Egypt and Syria.⁽⁵³⁾ The commercial reaction to the rupture in the balance of trade between production

centers in Islamic Spain and consumption centers in Christian Spain was expressed in the transitional period of the thirteenth [134] century by developing the rudiments of a home industry and supplying the remaining demand with imports. The full transition to an urban industrial textile industry, dependent to a certain extent on the importation of foreign artisans, became evident only at the very end of the century.

Since the textile industry was the most important medieval one, its progress is more or less the model for other craft trades. Iron was no doubt an exception; large-scale mining of ore is amply documented from the twelfth century, especially in the Catalan counties, where the precociously intensive diffusion of milling techniques was conducive to an earlier transition to industrial production. Moreover, this resource seems to have been controlled largely by ecclesiastical establishments which were able to finance mining and smelting operations. The monastery of San Millán was collecting part of its seignorial dues in iron and lead as early as the twelfth century and in quantities superior to its domestic needs. This surplus led to the early commercialization of metals, although large-scale exports (from the Basque ports) are a feature of the late thirteenth century, a movement linked to the commercialization of wine and wool.⁽⁵⁴⁾

The economic history of early medieval Spain has perhaps been overly complicated by the intrusion of polemic. In Castro's view, Christians never mastered the technical skills necessary to foment a strong urban economy but were content to let others (i.e., Muslims and Jews) produce for them. But the dependence of incipient industrial production on foreign technologies and technicians (discussed in Chapter 7) is a normal feature of economic development. Sánchez-Albornoz sees the retardation of the Spanish economy more in terms of the displacement of productive energies and financial resources from industrial to military activities, until the conquest could be completed. But the lag in the Christians' attainment of a level of productivity analogous to that of other European peoples can also be explained in purely economic terms. The economy of Christian Spain until the eleventh century was dependent upon that of al-Andalus and was "colonial" in that, in the context of international trade, it was primarily a producer of raw materials and, to the extent that it purchased finished goods, it did so in and through the Andalusí commercial network. When that network was first broken and then destroyed (by the conquest itself), its function was quite naturally replaced by other markets and by domestic production.

Notes for Chapter 3

1. *Siete Partidas*, 7.33.6.
2. Bonnassie, *La Catalogne*, I, 78; Moreta, *San Pedro de Cardeña*, pp. 85, 143.
3. Oliver Asín, "En torno a los orígenes de Castilla," pp. 349-351.
4. Luis García de Valdeavellano, *Sobre los burgos y los burgueses de la Españamedieval* (Madrid: Real Academia de la Historia, 1960), p. 117.
5. Al-Himyarî, *Péninsule ibérique*, pp. 118-119 (trans.). The cruciform plan is referred to as 'ala mithal al-salîb ("in the likeness of a cross").
6. Leopoldo Torres Balbás, "Extensión y demografía de las ciudades hispanomusulmanas," *Studia Islamica*, 3 (1955), 35-39.
7. On demography, see J. C. Russell, *Late Ancient and Medieval Population* (Philadelphia: American Philosophical Society, 1958), p. 92; *idem*, *Medieval Regions and their Cities* (Newton Abbot: David and Charles, 1972), p. 185; Torres Balbás, *Ciudades hispanomusulmanas*, I: 106; Guichard, "Peuplement de la région de Valencia," p. 141. On the retention of the Roman regional pattern, see Francis Violich, "Evolution of the Spanish City," *Journal of the American Institute of Planners*, 28 (1962), 174.
8. Torres Balbás, *Ciudades hispanomusulmanas*, I: 335, 339, 341, 369-387.
9. *Ibid.*, I: 173, 198, 204, 205, 210, 211, 212.
10. *Ibid.*, I: 134, 140 (*munyat*); 179, 180, 182 (suburbs); 200, 229 (*musallas* and *musaras*); 235-280 (cemeteries).
11. Represa, "Evolución urbana de León" and "Genesis y evolución urbana de Zamora." On Salamanca, González García, *Salamanca*, pp. 39-52.
12. E. A. Gutkind, *Urban Development in Southern Europe: Spain and Portugal* (New York: Free Press, 1967), p. 237.
13. On planned towns, see *ibid.*, pp. 240-246. Note also the lone Castilian example, Briviesca (province of Burgos), built in 1208 (p. 244, map 214). When the Muslims *planned* a new quarter, they laid out regular streets (Torres Balbás, *Ciudades hispanomusulmanas*, I: 360).

14. Torres Balbás, *Ciudades hispanomusulmanas*, I: 297 n. 7 (list of street widenings by Christians), 336, 338; note his observations (p. 340) On changing aesthetic norms governing the appreciation of Andalusí urban styles by later Spanish writers. Mut, *Vida económica en Lérida*, p. 290; Torres Fontes, *Repartimiento de la huerta y campo de Murcia*, p. 53; Bulliet, *The Camel and the Wheel*, pp. 224-226. Note Bulliet's attack on the prevailing idealist notion that the "oriental" city plan is generated by Islamic social principles.
15. Pedro Chalmeta Gendrán, *El señor del zoco en España* (Madrid: Instituto Hispano-Arabe de Cultura, 1973), pp. 88, 95, 97; Oliver Asín, "En torno a los orígenes de Castilla," p. 352.
16. Chalmeta, *Señor del zoco*, pp. 101-102.
17. Luis G. de Valdeavellano, *El Mercado en León y Castilla durante la edad media*, 2nd ed. (Seville: Universidad, 1975), p. 68; Sánchez-Albornoz, "Repoblación del reino asturleonés," p. 384.
18. Chalmeta, *Señor del zoco*, p. 128.
19. See list in Valdeavellano, *Mercado*, p. 65.
20. Valdeavellano, *Mercado*, pp. 70-72; Chalmeta, *Señor del zoco*, pp. 98-101; Torres Balbás, *Ciudades hispanomusulmanas*, I: 323; Oliver Asín, "En torno a los orígenes de Castilla," p. 350.
21. Chalmeta, *Señor del zoco*, p. 126.
22. Gideon Sjoberg, *The Preindustrial City* (New York: Free Press, 1960), p. 101; E. Lévi-Provençal, *Seville musulmane au début du XIIe siècle: Le traité d'ibn'Abdún* (Paris: G. P. Maisonneuve, 1947), p. 95; Torres Balbás, *Ciudades hispanomusulmanas*, I: 305-306.
23. See Torres Balbás, *Ciudades hispanomusulmanas*, I: 307, 311, 318, 328, 329, 332 *et seq.*
24. Gómez-Moreno, *Iglesias mozárabes*, p. 17 n. x; Sánchez-Albornoz, "Repoblación del reino asturleonés," pp. 352, 355.
25. Rodríguez Fernández, *Monasterio de Ardón*, p. 157; Bonnassie, *La Catalogne*, I: 474; *idem*, "A Family of the Barcelona Countryside and Its Economic Activities around the Year 1000," in Sylvia Thrupp, ed., *Early Medieval Society* (New York: Appleton-Century-Crofts, 1967), p. 112; García de Cortázar, *San Millán de la Cogolla*, p. 232; Vázquez de Parga, *Peregrinaciones a Santiago*, I: 472 n. 20, 476; Sánchez-Albornoz, "Repoblación del reino asturleonés," p. 383; J. Vilà i Valenti, "Notes sobre el poblament català medieval. El mercat," *Miscel·lània Puig i Cadafalch*, vol. I (Barcelona: 1947-1951), pp. 235, 240.
26. On the *hisba* jurisdiction generally, see Chalmeta, *Señor del zoco*, and Thomas F. Glick, "Muhtasib and Mustasaf: A Case Study of Institutional Diffusion," *Viator*, 2 (1971), 59-81.

27. Chalmeta, *Señor del zoco*, pp. 546, 586. On specific comparisons between the *hisba* manual of al-Saqatî and ordinances of late medieval Málaga, Granada and other towns, see Chalmeta, "El Kitâb fî âdâb al-hisba," *Al-Andalus*, 33 (1968), 1145 n. 4, 160 n. 1, 166 n. 2, 169 n. 2, *et seq.* Chalmeta's painstaking demonstration of the survival of these institutional and artisanal minutiae, particularly in towns, like Seville, where not many Muslims remained, is a striking commentary on the persistence of cultural forms.

28. On the low valuation of *hisba* in the Islamic world, see Chalmeta, *Señor del zoco*, p. 314. On the differential reception and development of the *almotacén* and the *mustasaf*, see Glick, "Muhtasib and Mustasaf," p. 72. On the *muhtasib* in *mudéjar* communities of thirteenth-century Valencia, see Burns, *Islam under the Crusaders*, p. 240.

29. On guilds, see Luis G. de Valdeavellano, *Curso de historia de las instituciones españolas*, 3rd ed. (Madrid: Revista de Occidente, 1973), pp. 286-287; Glick, "Muhtasib and Mustasaf," p. 75.

30. Torres Balbás, *Ciudades hispanomusulmanas*, I: 304-305, 366-367; José Lladonosa Pujol, "Proyección urbana de Lérida durante el reinado de Alfonso el Casto," *VII Congreso de Historia de la Corona de Aragón*, II: 202.

31. Claudio Sánchez-Albornoz, "La primitive organización monetaria de León y Castilla," in *Estudios sobre instituciones medievales españolas* (México: Universidad Nacional Autónoma, 1965), pp. 449-450, and "Repoblación del reino asturleonés," pp. 386-387.

32. Muñoz, *Colección de fueros municipales*, p. 49. *Almoçalla* is from Arabic, *musalla* (the prayer rug), *alfaneque*, from *fanak* (marten).

33. On the significance of gifts in the economy of the high middle ages, see Georges Duby, *The Early Growth of the European Economy* (London: Weidenfeld and Nicolson, 1974), pp. 56, 61, 259. Also: Sánchez-Albornoz, *Estampas de vida en León*, p. 135, and "El precio de la vida en el reino astur-leonés hace mil años," in *Estudios sobre las instituciones medievales españolas*, pp. 388, 390.

34. José María Lacarra, "Aspectos económicos de la sumisión de los reinos de Taifas (1010-1102), *Homenaje a Jaime Vicens Vives*, 2 vols. (Barcelona: 1965-1967), I: 255-279; José Enrique Ruiz Domenec, "The Urban Origins of Barcelona: Agricultural Revolution or Commercial Development?" *Speculum*, 52 (1977), 265-286. Bonnassie, "A Family of the Barcelona Countryside," p. 111.

35. On economic developments of the twelfth century, see García de Cortázar, *Epoca medieval*, pp. 262-263; Sánchez-Albornoz, "La primitive organización monetaria de León y Castilla," p. 471.

36. Lombard, *L'Islam*, p. 202, and *Espaces et réseaux*, p. 219. See also Urvoy's elaboration on Lombard's views ("Etude sociologique," p. 290). The Berber invasions cut off al-Andalus from the East, throwing it into economic dependence upon Morocco, creating an

exchange system which was insufficient to maintain the previous high level of the Andalusí economy.

37. Lombard, *L'Islam*, p. 178; Miguel Gual Camarena, "El hierro en el medioevo hispano," *La minería hispana e iberoamericana*, I: 276 n. 5.

38. On copper, Goitein, *Letters of Medieval Jewish Traders*, pp. 25, 52, 99 n. 13, 180 n. 7, 192, 261. On mercury, *ibid.*, p. 215; Lombard, *L'Islam*, p. 109.

39. Goitein, *Mediterranean Society*, I: 102, 223, 454; *Letters of Medieval Jewish Traders*, p. 127.

40. Goitein, *Mediterranean Society*, I: 157; *Letters of Medieval Jewish Traders*, 133.

41. Al-Saqundî, *Elogio del Islam español*, p. 116; Goitein, *Letters of Medieval Jewish Traders*, p. 54; *idem*, *Mediterranean Society*, I: 471 n. 41.

42. Goitein, *Letters of Medieval Jewish Traders*, p. 55; *Mediterranean Society*, I: 61, 215.

43. Goitein, *Studies in Islamic History*, pp. 308-311; *Letters of Medieval Jewish Traders*, pp. 29, 83, 122, 281, 284; *Mediterranean Society*, I: 214.

44. Al-Saqundî, *Elogio del Islam español*, p. 97; Goitein, *Letters of Medieval Jewish Traders*, p. 234, and *Mediterranean Society*, I: 419.

45. Goitein, *Mediterranean Society*, I: 60, 69, 103.

46. Goitein, *Letters of Medieval Jewish Traders*, pp. 192, 194, 200, 215.

47. Juan Zozaya, "El comercio de al-Andalus con el oriente: Nuevos datos," *Boletín de la Asociación Española de Orientalistas*, 5 (1969), 191-200.

48. See the fairly exhaustive lists culled by Gómez-Moreno, *Iglesias mozárabes*, pp. 126-129.

49. Miguel Gual Camarena, "Peaje fluvial del Ebro (siglo XII)," *Estudios de Edad Media de la Corona de Aragón*, 8 (1967), 155-168.

50. On slaves, see Lombard, *Espaces et réseaux*, pp. 23, 82; *idem*, *L'Islam*, pp. 115, 195, 197; Goitein, *Studies in Islamic History*, p. 225. On furs, Lombard, *Espaces et réseaux*, pp. 181-182.

51. Joaquín Vallvé Bermejo, "Notas de metrología hispano-árabe II: Medidas de capacidad," *Al-Andalus*, 42 (1977), 64-65. The Arabic equivalents are *qaffīz*, equivalent to the load or *himl*, *fanīqa*, *thamānī* ("eighth," although it was a twelfth of a *fanega*), and *ritl*.

52. See Miguel Camarena, "Para un mapa de la industria textil hispana en la edad media," *Anuario de Estudios Medievales*, 4 (1967), III, 113; Sánchez-Albornoz, *España: Un enigma histórico*, II: 120.

53. Miguel Gual Camarena, "El comercio de telas en el siglo XII hispano," *Anuario de Historia Económica y Social*, I (1968), 95-101.

54. Gual Camarena, "El hierro en el medioevo hispano," and Antonio Ubieto Arteta, "Los 'Votos de San Millán,'" *Homenaje a Jaime Vicens Vives*, I: 309-324.

SOCIAL STRUCTURE

1. Systems of Stratification

[135] From a comparative perspective, social structure offers problems of analysis which are difficult to resolve. Social historians have described Islamic and Christian societies of the middle ages according to different norms and using different terminologies. Christian Spanish society, like those of Western Europe, is conceived as having had a typical class structure, the definition of whose components is based mainly upon economic criteria: an aristocratic upper class that controlled the means of production; an emergent middle class which sought to wrest such control from the noble elite; and a dominated mass of free and servile peasants. But for Islamists the class model has had considerably less explanatory value, because the bias of the sources is to play down the significance of class distinctions; because social classes lacked the corporate distinctiveness they had in western law; because a number of other cleavages (ethnic and religious) have been seen as more significant than class ones; and because status (as in the cases of military and bureaucratic elites) was not necessarily a function of class in the western sense.

The discussion here of medieval Islamic society will be in accord with the general judgment of Islamists that stratification was by groups in which membership was ascribed on some basis other than economic (e.g., ethnicity, religion, kinship), although frequently ethnic, religious, or other cleavages tended to be coterminous with economic ones, or at least to have strongly patterned economic ramifications. The class structure was not as sharply articulated as in the Christian West and, as a result, economic mobility was more fluid.⁽¹⁾

The success of a comparative treatment of medieval societies would seem to rest upon the selection of structural features general enough to permit comparison without foundering on overly specific or ethnocentric constructs which are not easily transferred to different cultural settings. Thus, as Archibald Lewis wisely concluded in a comparative study of "feudalism" in medieval Europe, Islam, and Japan, the very real points of similarity tend to be obscured by the use of a term loaded with Western [136] connotations.⁽²⁾ If terminological problems can be overcome, then valid comparisons and contrasts may be found: for example, the religious ideologies of both cultures encompassed social philosophies which legitimated unequal distribution of wealth among various groups.

In the "polemic of Spanish history" the disagreement between Castro and Sánchez-Albornoz as to the nature of the differing social structure of medieval Islamic and Christian societies rests upon terminological and conceptual imprecisions. For Castro, ethno-religious cleavages outweigh the significance of class distinctions and therefore the interaction of "castes" (Muslims, Christians, and Jews) lent tonality to, and provided the basic dynamics of, medieval Christian social life. To Sánchez-Albornoz, Castro's

"horizontal" structuring of Castilian society seems patently absurd. For the former author, Castilian society was articulated vertically, by classes, not castes, like other societies of the Christian West.

This aspect of the polemic is confused by semantic problems. Specifically, Castro does not adequately define what he means by caste. To the present author, who first read Castro in English, the term has a specific meaning, amply and precisely defined in anthropological literature, of a closed, endogamous group, the lateral mobility of whose members (interaction with other castes) is severely circumscribed. In Spanish, however, the term has more restrictive connotations of purity of lineage (i.e., the usage *castizo*, pure of lineage) upon which Castro centers much of his argument without adequately defining the social, as opposed to ideological or cultural, structuring of caste interactions. Castro appears not to have realized that the castes were themselves internally stratified by class and that, as a result, interaction among members of different castes was colored by a common social structure in which all participated.⁽³⁾

Equally incomplete is Sánchez-Albornoz's discussion, couched as a resounding denial of the relevance of caste analysis. In his zeal to refute Castro, he in effect denies that ethnic groups have roles which are not susceptible to definition in purely class terms. Indeed, he even asserts that although Jews constituted a true caste in other European societies, they did not so do in Spain, where they were simply part of the middle class.⁽⁴⁾ This kind of argument is simply playing with terms and results in oversimplification of a complex social system.

Indeed, a social situation as complex as that of medieval Iberia demands analytical strategies which do not deny that complexity. In the discussion which follows, class and "caste" are not seen as mutually exclusive modes [137] of social organization. Rather, I stress the co-existence of both class and status structures in both societies (though in different mixtures) and attempt to determine the rules of social interaction prevailing in each. First to be discussed are the systems of kinship that underlay the structuring of more complex social solidarities; then the class structure; and, in Chapter 5, the dynamics of ethnic relations. It is true that in separating for purposes of analysis the different features of kinship, class, and ethnicity, the resultant picture of social structure may seem disjointed. I do so with this risk in mind.

2. Kinship

Until recently, the nature of kinship and its shaping effect upon social and political institutions in medieval Spain was not a topic accorded much importance by historians. The results of this oversight have been disastrous, leading above all to a complete and general misinterpretation of the nature of Islamic society in Spain. This imbalance has been rectified by the work of Pierre Guichard, who has demonstrated the tribal organization of Andalusi society of the Emirate and, in the Christian orbit, Ruíz Domenec, García de Cortázar, and others have identified the dissolution of the extended family as a significant and central social process of the high middle ages.

The Arabs and Berbers who conquered the peninsula did so not as isolated warriors, but as members of organized tribal groups. The Arabs and most of their early Berber allies were members of agnatic, patrilineal groups forming a segmentary social system, whereby individuals belonged to a hierarchy of increasingly inclusive segments, from the clan up to the tribal confederation. The basic tribal unit, the *qawm* (variously translated fraction or clan), is a unit of several hundred tents or families, linked agnatically. That is, the kinship system ascribes importance only to relationship through males. In such a system, endogamous marriages are viewed as the ideal because through endogamy power, prestige, and wealth are retained within the agnatic group rather than shared with a competing group into which a daughter might marry, with parallel-cousin marriages (the wedding of one's son with the daughter of the paternal uncle) preferred. A cross-cousin marriage (with the daughter of the maternal uncle or paternal aunt) is considered exogamous because the offspring gain a different lineage. The more powerful a tribal group is, the [138] more women it will attract from outside, the fewer it will lose, and the more endogamous it will become.⁽⁵⁾

Guichard demonstrates that the early Muslim residents of the peninsula settled in tribal or sub-tribal groups and that, indeed, it was the policy of important figures to travel with tribal entourages and to reconstitute their clans once the decision to settle in al-Andalus had been reached. This was the policy, to cite the most obvious example, of 'Abd al-Rahmân I, who gloried in having reunited his clan in Spain. A corollary to this strategy is that leaders build power by controlling their agnates.⁽⁶⁾ Prestige and power in segmentary societies is predicated upon the strength and cohesiveness of agnatic groups, and the political strategy of such groups is to attain the necessary cohesion through the practice of endogamy and through constant testing of the group's strength in competition with rival groups. Thus, as many students of Arab and Berber society have noted, a permanent state of war ("organized anarchy," in Robert Montagne's characterization) is the direct result of segmentary social organization.⁽⁷⁾

Segmentary organization gives rise to typical political forms. The basic unit is the clan -- the Arab *qawm*, the Berber canton -- which lives and fights together. The segmentary tribal structure makes it possible for such groups to subsist in relative isolation and, at the same time, because they are embedded in larger solidarities, to join in political or military federations with related groups. This gives rise to the kaleidoscopic pattern of atomization and amalgamation which is so characteristic of western Islamic, particularly Berber, society.⁽⁸⁾

The dispersion of clans yields one of the most distinctive visible patterns of the cultural geography of al-Andalus: the profusion of Beni- toponyms, particularly in the east of the peninsula. (These place names are generally identifiable as descriptive of a clan, named for its founder -- e.g., Benimamet, sons of Muhammad -- or of a clan as a tribal segment, as in Benigomar, from the Gûmara Berber tribe.) Such names, which are mainly Berber and represent settlements which seem to have postdated the emirate period, have been used as a historical source by Guichard in order to establish the tribal organization of the countryside. Most of these names are of insignificant places, mainly rural (and, when urban, indicative of the settlement of quarters or suburbs by agnatic groups) and typically mountainous (small valleys with twenty or so hamlets of which half might have Beni-

names).⁽⁹⁾ There is other data complementing Guichard's picture of the dispersion of related groups throughout the countryside.[139] Oliver Asín has noted traces of Berbers (probably Christian) in the heartland of Old Castile. He identifies the toponym Quintana there with Berber settlement, based upon the *khimása* ("one-fifth") sharecropping system typical of many regions of North Africa.⁽¹⁰⁾ I also believe that these Quintana, Quintanilla settlements may be of Berber origin, but that they relate not to the agrarian, but to the kinship, structure. Among many Moroccan Berber groups, tribes are divided into five primary segments or clans (*kham* *khmas* =: "five fifths"). In such a way, clans reproduce themselves spatially, maintaining the same name and enabling the creation of linked but dispersed networks of tribal relationships. It is this sense of "fifth" which may underlie the Quintanas of Old Castile, as well as such a place-name as Algemesí, a town in Valencia which was a region of heavy Berber settlement.⁽¹¹⁾

Arab and Berber tribal structure found political expression in the organization of confederations or alliances, which were formed according to the underlying logic of segmentary societies. The essence of this kind of political organization is that politics is viewed as a zero-sum game. The wealth, power, and prestige of one's own group are increased only by decreasing those of a rival group, leading to a more or less permanent state of conflict between neighboring groups as well as to characteristic patterns of alliances. The aggressive tendencies of this society, which has its roots in the socialization of children (through the encouragement of sibling rivalry and competitive behavior which is later transferred to those outside the agnatic group), expressed itself in typical socio-political formations, paramount among which was the division of the entire ethnic group into moieties. Such a dual division, based on fictive genealogical traditions, characterized both Arabs -- divided into Qaysîs (Mudarîs) and Kalbîs (Yemenîs) -- and the Berbers -- divided into Branes and Botr. The result is a socio-political system which requires that there be two, and only two, parties to any conflict, which in turn requires the formation of dichotomous coalitions.⁽¹²⁾

Much of the political history of al-Andalus, therefore, is occupied with accounts of tribal in-fighting, generally along lines of moiety division. Yemenis had originally concentrated in the southwest of the peninsula and in the Upper March; the Mudaris settled in the east but were displaced towards the center by the arrival of Yemeni contingents under Balj in the 840's. The governorships, as noted earlier, passed back and forth between Mudari and Yemeni candidates (the *jund* controlled the [140] governorship but was itself tribally organized and therefore participated in this typically tribal game). The Fihriîs -- the Qaysi family to which the last governor Yûsuf belonged -- based its claim to power on Mudari strength in the central regions, in alliance with Berbers to counter the superior force of the Yemenis. These latter supported the Umayyads in their successful attempt to establish an independent emirate. That the Mudari/Yemeni split was a very real element in the socio-political dynamics of al-Andalus, especially through the ninth century, cannot be doubted. Abu'l-Fidâ's much-quoted anecdote about seven years of tribal warfare in Murcia resulting from the picking by a Mudari of a grape-leaf from a Yemeni's vine is symptomatic.

Throughout the ninth century, the neo-Muslim Banû Qasî allied themselves with Mudaris to oppose the more numerous Yemenis in the Ebro Valley, and, in various places around the peninsula, the *fitna* (unrest) of the latter part of that century was initiated by

Mudari/Yemeni conflict. Strife between the moities tended not to be reflected in the sources thereafter, as the population became predominantly neo-Muslim, but the fall of the Caliphate was interpreted by some medieval Arab commentators as the result of Mudari/Yemeni antagonism. During the eleventh century, if inter-Arab hostility played less of an overt political role, differentiation at the sub-cultural level and group distinctiveness continued to survive: in the religious debates of that period Mudaris, according to Dominique Urvoy, were portrayed as religious zealots, Yemenis as tolerant of non-Arabs.⁽¹³⁾

The tendency in the social evolution of Islamic society was for the tribe to yield to the clan as the main unit of social organization, to be replaced in turn by relationships of a client-patron type. This progression is not necessarily linear, however, and seems to be a function of the dual forces of sedentarization and urbanization. According to Guichard, tribes ceased to be dynamic organisms in Islamic Spain because they ceased segmenting, which is the basic historical process of tribal organization. The permanence and stability of ethnic names from the eighth through the thirteenth centuries demonstrates that new groups, bearing new names, were not being created, a situation which reflected the separation of Andalusī society from the great, and still living, tribal organisms of the Islamic East. On the other hand, consanguinity remained a powerful social force (and so remained even among the Moriscos of the sixteenth century, who resisted taking Spanish names because such an act made it impossible to keep [141] track of agnatic lineages), as did ethnicity.⁽¹⁴⁾ Guichard notes that tribal feeling declined consistently, but that the mechanisms causing that decline are not understood. It seems to me that tribalism ceased to be a controlling factor in Andalusī social life at that point along the curve of conversion where, in mid-tenth-century, non-tribal neo-Muslims began to swamp the smaller Arab and Berber populations numerically. After the conversions were completed, the cultural center of gravity shifted to neo-Muslims, who were not involved with, and consequently cared little about, tribal issues. The enlargement of the non-tribal sector of society did not mean, however, that tribal values and forms of organization disappeared among previously tribalized elements, or among newly arrived Berber groups. Guichard's data on the incidence of Arabic tribal names (*nishas*) among Andalusī jurists seems to confirm both Bulliet's general hypothesis and his methodology (discussed in Chapter 1). In the caliphal era, the number of persons with Arabic tribal *nishas* was still small (about one-third of ibn al-Faradī's biographies); but two centuries later about two-thirds of ibn al-Abbār's sample have tribal names.⁽¹⁵⁾ This is about what one would expect, given the acculturation of converts to Arab norms, and is more a function of the modality of conversion than of tribal organization per se.

The kinship systems of Christian Spain present a less clear historical physiognomy: the model of blood relationships seems never to have been as sharply defined as was the patrilineal, agnatic structure among Arabs and Berbers. On the one hand, one finds a general drift away from the typical bilateral, cognate structures of primitive Germanic society, towards an agnatic, patrilineal structure. But this movement was an oscillating one which left a good deal of room for cognate relationships and in which the degree of agnaticism varied from epoch to epoch and from class to class. Indeed, the class differentiation of kinship relations is possibly the single point which most distinguishes Christian from Muslim kinship systems. On the other hand, there was a more clear, more deliberate evolution which saw the extended family (whether of cognatic or agnatic

orientation) yielding in the face of a socio-economic context that favored the stem or nuclear family. The stem family was powerfully supported not only by certain social and economic advantages accruing from the special conditions of frontier life, but also by ideological support from the Church. Here is the second distinct element of differentiation: Islam provided a framework which legitimated tribal values and gave them [142] religious significance; Christianity tended to work in the opposite direction, toward the development of inter-personal, rather than inter-group bonds.

The *gens*, or family, of the Hispano-Romans, one assumes, was patrilineal and agnatic. This is in contrast to the matrilineal kinship systems of the Cantabri and Basques, the least Romanized peoples of the peninsula, who retained segmentary organization in tribes and clans into the high middle ages, although under Roman influence the modal form of kinship seems to have become patrilineal. In a transitional state, succession among the Cantabri passed from male to male, but in the maternal line.⁽¹⁶⁾

There are numerous points of comparison between the kinship structures of the Basques-Cantabri and the Arabs and Berbers, against whom the former were the first to offer active opposition in the initial phases of the "reconquest." Such is the burden of Barbero and Vigil's analysis, which makes perfect sense in the light of Guichard's portrayal of Andalusí social organization: the segmentary Basque-Cantabrian society was, by the very nature of its tribal structure, able to meet the challenge offered by the alien tribal groups, through the process of continual warfare characteristic of such societies. Moreover, the evolution of tribal society among the indigenous peoples of the Cantabrian coast underwent a development similar to that which the Muslims were undergoing in the early decades of their domination of the peninsula: the devolution in organization from the tribal level to that of the clan.⁽¹⁷⁾

The kinship systems of the indigenous peoples of Iberia absorbed not only the influence of the Roman *gens* but of the Germanic family, which, unlike that of both the Romans and the Arabs, was bilateral. Elements of this bilaterality survived well into the middle ages, particularly in Germanizing customary law. In Castile, for example, the family's joint liability in penal matters was recognized. The Fuero of Sepúlveda provided that vengeance for the murder of a relative was not a crime if the avenger had the same great-great-grandfather as the original victim. Other stipulations, such as those regarding the necessity of the wife's permission in the sale of property (Fuero of Jaca), seem related to this tradition.⁽¹⁸⁾

Nevertheless, bilaterality seems throughout this period, and all over the north of the peninsula, to have been yielding to a patrilocal, patrilineal, agnatic kinship system. The extended family was still in evidence in the tenth century and can be identified as the basic land-tenure unit. Thus, Ruiz Domenec likens the tenth-century Catalan *mansus* or *mas* to the Anglo-Saxon hide -- the *terra unius familiae* -- a continuous space exploited [143] by a single, extended family.⁽¹⁹⁾

On the other hand, there are ample signs that the extended family, in whatever form, was in decline throughout the period, although among the nobility it held its form longer. The structure of the Cid's family in the eleventh century is a case in point: his *mesnada* or

entourage included four of his nephews as well as the husband of his sister-in-law, a group that was clearly enough bilateral. But the Cid's formal name, Rodrigo Diaz de Vivar (the latter element a place name, the locus of the familial landholding), indicates that the emphasis of social organization had shifted from the community of blood relationships (as revealed in late Hispano-Roman naming patterns which included tribal ascriptions) to the common hold of the extended family.⁽²⁰⁾

Throughout the high middle ages the scope of the extended family was consistently diminished, particularly as the state, or public authority, was able to provide enough personal security to diminish the need for blood vengeance; as the Church promoted a similar policy through the promulgation of the "Peace of God"; as new institutions such as guilds and military orders replaced the older solidarities, based on kinship; and as urbanization and colonization, reflecting a more mobile society, hastened the fragmentation of old kinship groups. Feudal relations, involving the dependency of unrelated persons, were, in effect, substitutions for bonds formerly maintained within the kindred circle.

On the Catalan frontiers of the late tenth and early eleventh centuries, the process of disaggregation of the extended family or (in Ruiz Domenec's characterization) the scaling down of patrimonies to unicellular units of production can be observed in full force. A major impetus to the cultivation of new lands there was owing not to population pressure per se, but to the accelerating movement of the fragmentation of the extended family, as a result of which conjugal units left behind a joint patrimony in order to cultivate a parcel of their own on the frontier. Consequently it is among the frontier peasantry that Bonnassie detects the greatest fragility in family structure, with the insecurity of frontier life favoring a conjugal family. The move towards the frontier was also abetted by the practice of partible inheritance, whereby those with small shares in the family patrimony were eager to migrate. At the same time, inheritance rules were shifting towards a situation favoring indivisibility of patrimonies and inheritance by primogeniture: through the practice of *immemoratio*, marriages were restricted and the better portion of the patrimony was bequeathed to one son only.⁽²¹⁾ Thus, in a struggle between the [144] rights of the kindred group (partible inheritance) and the need to keep the patrimony in substantially one piece, the economic imperative won out over an already weakened family structure.

As in Castile, elements of extended kinship survived among the nobility, as Catalan counts tended to marry endogamously (although the counts of Barcelona, for political reasons, were an exception, preferring to marry non-Catalan nobility).⁽²²⁾

The differential structure of kinship in Islamic and Christian societies offers a fundamental point of departure for comparative analysis. Historians of each society have asserted that the way in which kinship relations were articulated lent flexibility and adaptability to the society in question -- flexibility which proved crucial at certain critical junctures of competition between the two blocs. Thus Guichard asserts that the flexibility of agnatic systems allowed such societies to retain vitality while inflexible state systems declined, with the result that the former were easily able to conquer the latter. Similarly, Barbero and Vigil assert that, among the Basque and Cantabri, agnatic flexibility allowed these tribally organized peoples to resist the centralizing grip of the Roman state and to oppose successfully Arab and Berber military pressures through the similarity of their social

structures.⁽²³⁾ On the other hand, Ruiz Domenec claims that bilaterality lent to Catalan society of the tenth century an extraordinary flexibility in the manipulation of economic resources and in the making of political alliances. Indeed, Guichard demonstrates that in the case of strictly agnatic groups endogamy acts to promote a rather brittle political structure, conducive to continual tribal in-fighting and to the forming of unstable, if predictable, alliances. When bilaterality survived, as in the case of the Neo-Muslim Banû Qasî whose daughters married Christian Basque nobility, the result was to produce a territorial domain with relatively stable governance lasting several generations: a situation more typical of Christian than of Islamic political forms.⁽²⁴⁾

Thus, in al-Andalus, agnatic flexibility proved an advantage at a time when Christian states were disorganized, a disadvantage when it discouraged the creation of a strong, stable institutional base to defend the society against cohesive Christian powers. Bilateral flexibility allowed, among the Christian powers, the creation of a natural system of family-based alliances among princely houses, while at the same time allowing the military class to build, through similar processes, a stable and substantial economic base.

Looking ahead to a consideration of the comparative dimensions of [145] "feudalism," we can agree with Marc Bloch's observation that strong kinship ties and those of a feudal nature are, to a degree, antithetical (although feudal institutions did have the secondary result of reinforcing kinship bonds already on the wane). The weakness of kinship ties explains why people seek, or accept, other kinds of relations that offer security and protection. Bloch shows that wherever powerful agnatic groups survived (e.g., in Celtic areas), there was no feudalism.⁽²⁵⁾ Extending the argument, one might say that feudal relationships come into existence only at the expense of kinship arrangements which they were designed to replace or to compensate for. One would expect that wherever and whenever agnaticism survived in al-Andalus there would have been no feudal arrangements whose end was protection or group cohesion, since those features would still be supplied by the kinship group.

Comparative kinship study also makes clear that certain values, such as honor and aggressivity, generally (although erroneously) thought to inhere in a culture, are in fact related to specific aspects of the kinship and family structure, and to the way in which children are socialized. To give but one example: Guichard provides an elegant analysis of the different social bases of the feeling of honor in Islamic and Christian societies. In the tribal society of Arabs and Berbers, honor is directly tied to agnatic feeling and is reified: when one's agnates are attacked or vilified, one suffers a direct loss of honor. Among Christians, honor as a value varied with social status and was defined not in terms of one's embeddedness in a particular group, but in more external terms, such as wealth. In Christian society, for example, a poor man's honor is increased by marriage to a wealthy woman with higher social status. In agnatic society, a wife taken from outside the agnatic group cannot enhance the prestige of her husband, no matter how much wealth she might bring him.⁽²⁶⁾

Values, in sum, do not float freely in a culture and cannot be handed down from distant ancestors as part of a general cultural heritage. Thus, to say that medieval Spaniards exhibited certain Iberian, Roman, or Gothic personality traits is to say nothing, unless it

can be shown that there was also continuity in the social structure that produced those traits.

One further aspect of a comparative nature bears mention. Christians, upon conquering and occupying al-Andalus, had frequently to replace institutions which had been tribally organized with non-tribal organizational forms. (To be sure, the progressive weakening of the extended family had adequately prepared them for this task.) A case in point are [146] the communally organized irrigation systems of southern and eastern Spain. We know that previously irrigation canals, especially those in areas of Berber settlement, were organized along tribal lines. Evidence of this is found, for example, in the huerta of Valencia, where the Favara Canal was at one time an entity of the Hawwâra Berbers (*saqit al-Hawwâra*), and in Gandia and Murcia, where secondary canals retain the telltale Beni names indicative both of clan settlement and of the division of water by lineage groups. In tribal societies, as in certain irrigated districts of Morocco today, such canals are administered through the normal workings of tribal political organization: the community of elders decides distribution arrangements, settles disputes, determines the custom, and provides executive authority. When the Christians took over these canals, the customary arrangements regarding distribution procedures, allocation of water rights, and so forth, were learned from the Muslims but were subsequently administered either by town councils (stressing the authority of the elders) or by autonomous communities organized along guild lines (stressing the egalitarian aspects of Berber tribal organization).⁽²⁷⁾

3. The Lower Classes: Freedom and Dependence

In Christian Spain one can detect a general pattern of the early disappearance of servile tenure and the concomitant predominance of small, free proprietors. Although Roman emphyteutic contracts did survive in such socially conservative areas as Galicia, in fact the mass of cultivators who participated in the settlement of areas like the Plain of Vich and the Duero Valley of the ninth and tenth centuries were holders of allodial parcels and possessed other properties (such as shares in mills) consistent with their free and independent status. At the same time, perhaps the most striking aspect of this frontier liberty was its relative shortlivedness, its tendency to be eroded by the progressive extension of seignorial domains and prerogatives. By the time the Duero line was breached, the peasant proprietor was severely disadvantaged.

In describing the social structure of the Asturo-Leonese kingdom, Sánchez-Albornoz distinguishes between two socially distinct regions: the mountainous northwest, where late Roman social structure survived in an evolved form (notably in Galicia which had plenty of serfs with which to populate the north of Portugal), and the zone to the south of the mountains in León and Castile, settled by Mozarabs and individuals [147] from points north.⁽²⁸⁾ Those who participated in the repopulation of the Duero Valley tended to be free men, more so in León than in Galicia, and even more so in Castile, where the military needs of the counts served to enhance the status of freemen even more than elsewhere on the frontier. The settlers tended to be free migrants -- *advenientes et escotos* -- although another large group of settlers held a more qualified status. Lands granted *ad populandum* frequently went to *juniores de hereditate* who held emphyteutic contracts but who were legally free and could alienate their holdings.⁽²⁹⁾

The emergence of hamlets and villages (*villae*) of freemen is one of the most singular aspects of Iberian society of the ninth and tenth centuries. A plethora of documents reveal small free proprietors acting in collectivities, as in the donation of a collectively owned meadow to an abbot in 972,⁽³⁰⁾ or singly, in the sale or donation of small parcels or other appurtenances.

The economic freedom of action of these small proprietors can be appreciated in their ownership, either individual or collective, of mills or rights to irrigation water. Unlike the typical western European situation, whereby the ownership of mills was vested in the king or territorial lords (a monopoly which underscored the economic dependence of the peasantry, forced to grind grain at the lord's mill), in Castile and León groups of freeholders owned and evidently built mills for their own use or benefit. Indeed, such mills vastly outnumbered, during this period, those owned by kings or by ecclesiastical institutions. Even when a nobleman owned a mill, such possession may not have had the seignorial connotations one might expect. The Cid, for example, was scorned by the Beni Gómez as a working miller, and therefore was deemed unfit as a prospective in-law:

Who hath news of My Cid of Vivar?
To the Ubierna [River] bid him go, to tend his mills
And exact his toll as is his wont!
Shall a miller's daughters wed with scions of Carrion? (l.- 3378-3381)

Here one can observe the scant social distance separating a freeman from an *infanzón*. True, the Cid collected tolls, but the implication is that he officiated at the mill personally and was not a mere receiver of seigneurial dues.⁽³¹⁾

Once a mill was constructed, it would either be divided into shares by [148] the builder, or else usufructory shares (called *vices*, typically the equivalent of one hour or one day's use per week) were distributed. These shares could be alienated and formed an important portion of the freeholder's patrimony. There are frequent documents from the tenth century detailing transactions among smallholders involving the ownership of such shares in mills. That such persons owned as little as one hour's use per week, or a one-eighth share in the mill itself, indicates that men of modest means were involved. In 1012, no less than twenty-one such proprietors collectively sold their rights (*nostras vices*) in a mill on the River Vena to the abbot of Cardena.

The same was true of water rights and the appurtenances of irrigation systems. One finds individual proprietors owning an hour of water, or a share in a diversion dam or canal. Such holdings were subjected to the same pressures as were felt upon land. Thus, alongside substantial small ownership, one finds as well monasteries buying up mill shares, in an effort, perhaps, to acquire in a piecemeal way the monopolies characteristic of their European counterparts.⁽³²⁾

The emergence of whole settlements of freemen raises the issue of the similarities and differences between the social structure of the frontier and that of the hinterland. In form, certainly, free and seignorial *villae* must not have differed much. For tenth-century Catalonia, Bonnassie describes a minimal aggregation of seven or eight families of allodial

landholders, plus a priest and a smith -- the basic village community. The same would appear true of León and Castile, with perhaps a larger population per settlement. Such hamlets were the basis of agrarian exploitation and could evolve in two directions: they could become the nuclei of free towns (*concejos*) or they could become seignorial, subsequent to their acquisition (for example) by a monastery.⁽³³⁾

An intermediate state, that of collective commendation to a lord, with no loss of freedom, is mentioned below.

The social structure of the seignorial village (the *mansus*) seems not to have differed much from the general organization of manors in pre-feudal Europe. There was a group of servile peasants, called *casatos*, originally small in number but increasing in the eleventh century. These were adscripted to the land in the typical manner of serfdom. Then, there was a large class of *collazos* or *solariegos* (the successors to holders of emphyteutic contracts), not adscripted to their land but who owed substantial dues (taxes and small amounts of grain, livestock or wine) and [149] work services to the lord. This class resembles the Anglo-Saxon *ceorl*. In Catalonia, there seems to have been a similar distinction between the adscripted *homines de redemptione* and the *villani de parato*, who paid rent.⁽³⁴⁾ But two distinctions must be made concerning the internal stratification of the peasant class. First, the distinction between free and servile was not a critical class division, in spite of the interest of medieval jurists to make it so. Second, by the end of the eleventh century, in Castile, *casatos* and *collazos* had effectively merged and the terms describing them became interchangeable, as the status of all seignorial peasants was leveled out.⁽³⁵⁾

The role of the frontier as a creator of freedom has been much stressed in the literature, especially by Sánchez-Albornoz (as in his famous characterization of the Duero Valley as an island of freeholders in feudal Europe).⁽³⁶⁾

Certain of the settlers, such as Mozarabs and Basques, seem to have arrived on the frontier with no previous or relevant bonds of dependence. On the other hand, flight to the frontier was not entirely unrestricted. In fact, since kings and lords did not wish to weaken previously established seignorial domains, men called *homini excusi* were especially favored as migrants. The notion of "excused men" appears, for example, in a charter of Fernán González of 941, in which he grants the monastery of Cardeña a place to be settled "not with men from my villages, but with excused men, and from other villages." "Excused" in this sense meant free from tribute and seems to have represented an attempt to prevent the migration of any who were not of originally free status.⁽³⁷⁾ Thus the frontier was increasingly settled by men who were totally free of obligations but whose freedom to move varied with circumstances and custom. As Carlé implies, peasant families were seen by their lords as dues-paying units: so long as the dues continued to be paid, mobility was possible. Those who owed no dues had no limits placed on their movement -- and such status was most typical of the collateral relatives of the head of household and his heir. Sometimes movement was contingent upon forfeiture of the original holding, or upon the sale of such a holding to someone who would continue to pay the due. The simplest solution was for a lord to shift his own men around, from older settlements to less densely populated ones.⁽³⁸⁾

The eleventh through thirteenth centuries were characterized by an accelerating movement of seignorialization (particularly ecclesiastic domains, which grew rapidly through pious donations, whereas lay domains, [150] which had to be enlarged through purchase, lagged behind); this meant a concomitant loss of freedom of action for the small proprietor. In the plain of Barcelona, we note the allode yielding to the precarium in the eleventh century, as well as the adscription of the peasant to his land; in Galicia, the spread of the *incommuniatio* contract, whereby the peasant yielded half his property to a lord and received it back in tenancy; in León and Castile, the amalgamation of free and servile peasant sectors to form a more homogenous peasant class which, if not entirely tied to the land, was definitely not free.⁽³⁹⁾

Most typical of the retrenchment of freedom was the spread of the *benefactorium* or *behetria* contract in Castile and León from the eleventh century on. This contract, one of partial dependence, was at first entered into freely by (for example) old persons who wanted protection in their old age, women without families, or indebted persons. These peasants continued to farm their own parcels but now paid rent to a lord to whom they owed, in return for protection, loyal service, and whom they called *dominus* or *senior*. Thus their status came to approach the servile norm; yet they remained legally free, could break the contract and change domicile at will (*vadit ubi voluerit*, in the words of the Fuero of León). With the passage of time, the contracts tended to become hereditary and, by the thirteenth century, *behetrias* had become collective, involving whole villages which had formerly been completely free.⁽⁴⁰⁾

It should be noted that this process of the progressive loss of freedom by the peasant class, whether actual (as when expanding seignorial domains acquired peasant lands) or fictive (as when jurists, under the impetus of Roman law, associated various classes of peasant tenure with Roman emphyteutic contracts), was quite common in western Europe. In Norman England, the old *ceorl* class lost its freedom as feudalizing jurists assumed its equivalence with unfree villein tenure. Given the frequent political and social turmoil of the period, peasant groups who were protected may have enjoyed an actual advantage over those who retained full legal freedom but who had to struggle against powerful noble interests on their own. A result of the partial loss of freedom implicit in the *behetria* contract was a gain in group cohesion which may have been to the peasants' advantage in a climate of political uncertainty and declining economic returns.⁽⁴¹⁾ The intermediate situation of the *hombres de behetria* may be compared favorably to that of seignorial tenants, such as those of Sahagún, who formed a *hermandad* (brotherhood) in [151] 1111 to oppose the excesses of the Abbot -- a revolt which failed owing to lack of group cohesion.⁽⁴²⁾ Or, one could compare their relatively stable position with that of their counterparts south of the Duero who were severely disadvantaged because of the virtual impossibility of the small proprietor's participating in the dominant sector of the agrarian economy, the sheep-raising industry.⁽⁴³⁾

By comparison with accounts of the Christian lower classes, data concerning the masses in Islamic Spain are scant indeed. The urban lower class -- the *'amma* -- appears in historical sources (such as those describing the participants in the Revolt of the Suburb in ninth-century Córdoba) as a socially undifferentiated group: it included not only workers, but also artisans and small merchants.⁽⁴⁴⁾

The occupational structure of this class becomes visible in ibn 'Arabī's description of Andalusī sufis of the early thirteenth century. The mystical movement was characteristic of lower-class urban artisans, as revealed in their occupational sobriquets (*nisbas*), summarized in Table 3. Cobblers, smiths, tailors, potters, as well as workers in trades of obviously low status (henna siever, tanner) found solace in Sufism in the waning years of Andalusī civilization, faced with tremendous pressure from the Christian states.

There were slaves in al-Andalus, to be sure, but these tended to enjoy a domestic, military, or administrative role, rather than an economic or agrarian one.⁽⁴⁵⁾

Considerably more material survives concerning the rural lower classes, but many of these sources are of Christian provenance, describing the Muslim minorities of the twelfth and thirteenth centuries. Studies of the Ebro Valley and of the Valencian region make clear that the *sharīk* (meaning partner, party to a sharecropping tenancy contract), or in the Latin documentation, *exaricus*, was the predominant social type in the Islamic countryside. *Exaricos* were seen by an earlier generation of historians as servile tenants, probably reflecting the tendency of medieval jurists to assimilate their status to that of servile Christian peasants, adscripted to the land and holding emphyteutic contracts. In fact, the Muslim *exarico* continued to hold the same status under the Christians as under Islamic rule: he was a contract-tenant with real, but limited, ownership rights. The basis of the contract was a perpetual lease at a fixed rent, but the *exarico* was a free man and could alienate a parcel held under such a contract at will.⁽⁴⁶⁾

Under such terms, Muslims living under royal jurisdiction (as in the Ebro Valley during the thirteenth century) tended to [153] be better off than their Christian counterparts, who inhabited seignorial domains. Christian documentation, therefore, tends to support the view that sharecropping was the universal form of agrarian exploitation in Islamic Spain.⁽⁴⁷⁾

Castilian, Leonese, and Portuguese documents of the eleventh century and later refer to persons called *maulados* (Latin, *maullatus*). The term seems always to have been used in the sense of *encomendado*, and its abstract substantive form, *maladía*, was used interchangeably with *comenda*, always referring to land arrangements. These *maulados* were Mozarabs who used the term, derived from Arabic *mawla* (client) to describe their social status which, according to Sánchez-Albornoz, was at times that of freedman (*liberto*) and, at others, that of an *hombre de behetria*.⁽⁴⁸⁾ We can accept, therefore, Sánchez-Albornoz's conclusion that *maulado* was a simple synonym for *hombre de behetria*, and also that these *maulados* or their progenitors had not in al-Andalus been *mawlas* in the strict sense of the word. Clientage was, strictly speaking, a relationship of dependence with an Arab tribe entered into by converts to Islam. But then, what does this usage imply in terms of the perception by Mozarabs of social life in al-Andalus? It would seem a reflection of the common status of all rural peasants, whether Neo-Muslim or Mozarab, of dependence upon a patron, with or without formal adherence to a tribe (which in practical terms may not have made much difference anyway). The use of the term by Mozarabs doubtless can be taken as an indirect proof of the generality of clientage relations in al-Andalus.

Lévi-Provençal carried this discussion a step further by noting the semantic equivalence between the Arabic *mustana'* and the Latin *benefactus*, concluding that there was another

type of clientage relationship prevalent in al-Andalus, the *istina'*, which he supposed to be a simple continuation, in Muslim dress, of the late Roman *patrocinium*.⁽⁴⁹⁾

Such a common origin would explain the convergence of Islamic clientage relations among Neo-Muslims and Arabs on the one hand and between Mozarabs and their Muslim patrons on the other.

4. The Middle Classes: Two Failed Revolutions?

Middle classes were comprised of those who, through the practice of trade and of artisan crafts, gained control of a portion of the means of production, formerly monopolized by an aristocratic elite. Because this [154] control was partial, the middle class had to form cross-cutting alliances of one or another kind with the elite. The existence of such alliances in all medieval societies inevitably leads to confusion as to where the boundary between the middle and upper classes lay. Since the objectives of the middle class included the desire to join, supplant, or countervail the aristocracy, the boundary between the groups was, in part at least, a function of the relative success which the bourgeoisie attained in reaching such goals. Moreover, since the dominant mode of analysis rests upon an evolutionary hypothesis (that at a certain stage of economic development a "middle class" will emerge, grow, and eventually seize power), the problem of defining class boundaries becomes confused with issues that are, in effect, teleological. Thus one finds, particularly in Castilian historiography, concepts such as "true bourgeoisie" and "the normal development" of a middle class, indicating the measurement of that group's evolution against a reified and abstract standard. Thus Valdeavellano asserts the "normal" development of a bourgeoisie in towns where French influence was felt, as opposed to a truncated development elsewhere.⁽⁵⁰⁾ Reyna Pastor clearly demonstrates the cross-cutting alliances made by Castilian burghers of the twelfth century with the nobility, yet then asserts that these burghers did not constitute a "true" middle class because of their parasitic relationship with the feudal structure.⁽⁵¹⁾ Elsewhere, the same author concludes that there was likewise no "true bourgeoisie" in al-Andalus, even though the middle class there did manage to escape subordination to a feudal nobility.⁽⁵²⁾

Therefore the question of class definition is related to, and partially obscured by, the issue of the sharing of power between aristocratic and bourgeois sectors. In the Islamic world, the bourgeois revolution is reckoned a failure because the attainment of aristocratic status was a matter either of lineage or of entrance into a state military bureaucracy. Yet a distinctive element of the middle class -- the *fuqahā'*, or jurisprudential elite -- while it disdained a certain kind of political power (the direct seizure of or participation in state control), still exerted enormous influence over certain policy matters (those directly touched by the concerns of Islamic law) and over the tonality of public life in general. In Castile, the bourgeois revolution foundered on its own success: noble status was too accessible and the middle class was progressively deprived of its leadership from the mid-thirteenth century on, as *caballeros villanos* were ingested into the lower nobility.⁽⁵³⁾ The very notion of a medieval bourgeois [155] revolution seems an anachronism, conceptualized in terms of nineteenth-century processes which can only obscure the variegated socio-economic patterns of medieval societies which allowed for considerable variation in the structuring of class boundaries, in spite of attempts to define them with legalistic exactitude.

The expansion of Islam created conditions favorable to a commercial revolution of gigantic proportions by linking sources of raw materials to centers of production, and these to centers of consumption, and by joining together areas of specie surplus with those of deficit. The agents of this phenomenon were a commercial class of Muslim, Jewish, and Christian traders, based in the great Mediterranean entrepôts, who ranged over the entire length of the network, from Spain to India. The commercial and industrial sector was the social base of an important middle-class subgroup, the *fuqahâ'*, who provided the personnel which staffed the judicial and executive offices of urban jurisdictions (e.g., judgeships and prefectures), which, in the absence of a differentiated political structure, provided the low-level institutional continuity which gave cohesion to the society even in the face of political instability at its upper levels. The Islamic middle class of the middle ages was characterized, therefore, by an intertwining of commercial and scholarly interests: the reverence of the merchant for learning, the interconnectedness of commercial and scholarly networks of communication (revealed in the complex patterns of travel with the frequently combined motives of scholarship and commerce), and the fact that Islamic law, the metier of the *fuqahâ'*, was codified during the epoch when a commercial mentality dominated Islamic urban society.⁽⁵⁴⁾

The *fuqahâ'* are the only sector of the Islamic middle class about whom there is enough information to provide at least the starting point for a social analysis. *Fuqahâ'* are consistently characterized as "people of means" (*ahl al-khair*), and it is clear that many came from mercantile families, when not engaged in commerce themselves. 'Abd al-Haqq b. al-Hasan, a judge in Almohad Almuñécar was known as al-Mâlî ("the wealthy"), noted ibn al-Zubair, and the prosperity of his forefathers explains why. Another *faqîh*, 'Abd al-Haqq b. Muhammad al-Zuhri, whose biography was recorded by the same author, was described as a "professional businessman (*muhtarif b'il-tijara*).⁽⁵⁵⁾ Similar examples could be extracted from any of the biographical collections.

There are indications, too, that the *fuqahâ'* were not a homogeneous [156] class but were internally stratified. According to Hussain Mones, there was a serious cleavage among Andalusí *fuqahâ'* of the ninth century. One group, the *shuyúkh al-fiqh*, were narrowly legalistic and interested in exercising power. Later in the century a new group, primarily interested in the emerging religious sciences (especially that of tradition -- *hadîth*), came to the fore. These *shuyúkh al-hadîth* traveled to the East in search of learning and gained, upon their return, a moral prestige superior to that of their rivals.⁽⁵⁶⁾

The cleavage in scholarly focus must have been underlain by social distinctions, although one can only surmise what these might have been. Certainly those who traveled to the East were socially, as well as geographically, mobile. Yet there are no apparent distinctions in wealth between the two groups; a typical figure of the *fiqh* group, Muhammad b. Mu'awiya, was a businessman, but those who learned *hadîth* must have had the capital to finance their journeys. More likely, this cleavage is related to the curve of conversion. The *shuyúkh al-hadîth* who returned from Eastern studies to attain positions of scholarly leadership in the first half of the tenth century were learned enough to create an Andalusí school of jurisprudence. This creation of a group of scholars no longer dependent upon Eastern tutelage seems a characteristic feature of the explosive period when local institutions are needed to serve a rapidly expanding mass of Muslims. If Bulliet is correct, one might guess

that the *shuyúkh al-hadīth* included numbers of recent converts, proceeding from a higher stratum than that represented by the *shuyúkh al-fiqh*. The hypothesis merits testing, although the adoption of Arab names and false genealogies makes this all but impossible. Certainly by the thirteenth century it is apparent that most *fuqahā'* were muwallads.⁽⁵⁷⁾

As a result of the massive conversions, the *fuqahā'* achieved tremendous authority as moral and religious preceptors of Islamic society, particularly urban society. The political expression of this authority is discussed below (Chapter 6, section 2), but here it is necessary to point out that the legitimacy of the *fuqahā'*'s prestige among the Muslim masses rested in part upon their learning and their role as religious mediators and in part upon their ability to disassociate themselves from the more unsavory aspects of political power. Inevitably, therefore, the relationship of the middle class, whose values were those of *fuqahā'* (i.e., religious and commercial), with the ruling elite, whose values were tribal, aristocratic, and tended towards laicism, was bound to be ambivalent. Refusing to accept gifts or political appointments from princes was a sign of moral prestige. Civil power [157] was of no interest to them. In the late tenth century, a *faqīh* dreamed that he had said to ibn Zarb, chief judge of Córdoba: "I have never found anything more bothersome than the frequenting of kings." On the other hand, for the good of the social order, kings had to be frequented, especially when they set bad examples for the rest of the Muslims. The sixty days of fasting imposed by Yahya b. Yahya upon 'Abd al-Rahmān II for fornication is a well-known example.⁽⁵⁸⁾

Once their group cohesion was established, the *fuqahā'* were able to maintain it through generations by virtue of the structure of learning itself, which provided a kind of mechanism of elite recruitment modeled after tribal lines of authority. The prestige of a given *faqīh* was in part the reflection of that of his masters, and the masters of his masters, and of the entire chain of teachers upon whose authority he transmitted tradition. Thus scholarly genealogies can be established for scholars (and were, in fact, in biographical dictionaries) which paralleled those of family.⁽⁵⁹⁾

The necessity of establishing a scholarly genealogy accorded well with both the tribal and occupational structure of the society. Members of the same family tended to follow similar pursuits. Of the four hundred thirty-four jurists of the Almohad period registered by ibn al-Zubair, forty-nine (11.3 percent) transmitted on the authority of, or studied with, their fathers. An additional twenty-one (4.8 percent) studied with a grandfather, cousin, uncle, or another relative.⁽⁶⁰⁾

If the internal structure of this class is not quite clearly delineated, the boundaries between it and the tribal or military aristocracy seem to have been sharply defined, by tradition and by the differing value systems that each group embraced.

In Christian Spain the problems of analysis are reversed: the internal structure of the middle class is easily defined, but the boundaries between it and the nobility are often hazy. In the Barcelona region, Bonnassie sees a "pre-bourgeois" class, the sons of villagers who had become rich by selling agricultural surpluses, emerging in the late tenth century. By the early eleventh, the class is consolidating itself as an urban patriciate, taking advantage of an inflationary economy which permitted it to reinvest profits in rural property.⁽⁶¹⁾ The

tight ligatures between town and countryside seem to be a mark of the emergent Catalan middle class.

In the west of the peninsula, although professional merchants are documented in the town of León by 910 and references to merchants increase throughout the eleventh century, it is only in the twelfth that such [158] individuals really concentrate in cohesive groups in towns. According to Valdeavellano, the middle class of León and Castile was, in its origins, dependent on the flow of commerce along the pilgrimage route and seems to have arisen only in those areas colonized by *francos*. In towns not located along the pilgrimage route, the middle class was but thinly established and in some of these places it disappeared completely as a result of the civil wars of the twelfth century.⁽⁶²⁾

The consolidation of the bourgeoisie along the pilgrimage route can be appreciated from the privileges accorded to the town of Jaca by Sancho Ramírez in the last quarter of the eleventh century: burghers were vouchsafed the inviolability of their domiciles, exemption from onerous military duty, and a modicum of immunity from royal justice (the king's *merino* could not collect fines within the city).⁽⁶³⁾

In both the east and west of the peninsula the steady consolidation of the middle class was accompanied by the progressive stratification of the middle groups into blocs distinguished by differential economic and political power. Thus, the population of the *burgo* of eleventh-century Zamora was stratified into *mayores* (those who had a horse) and *menores*. The same was true in Santiago and Sahagún a century later, where there was clear social differentiation among an incipient patriciate of merchants and master craftsmen and those apprentices and artisans who worked for them, and, in the Catalan country, in Lérida, where a commercially based patriciate of *prohombres* dominated a more numerous *pueblo menudo* of artisans.⁽⁶⁴⁾

Such cleavages were normative throughout the towns of medieval Europe, as political power was subjected to the exigencies of competing guild interests and as the commercial patriciate began to make its way into the ranks of the lower nobility.

This latter phenomenon is particularly characteristic of Castilian and Leonese towns, where conflictive relations between burghers and nobles in the twelfth century gave way to a certain amalgamation of interests in the thirteenth. Rebellions of burghers against seignorial privileges in Sahagún (1087, 1110-1115, 1136, 1152), Santiago de Compostela (1116 against the powerful bishop Diego Gelmírez; and 1136), and Lugo (1110, 1159, 1184) are the clearest indications of the social maturity of the new class. In Pastor's particularly lucid analysis, the *francos* and other immigrants who populated the towns along the pilgrimage route were social non-conformists who quickly rebelled against the status quo and who were able to instill their values of non-conformity in their children; this [159] fact explains the generational periodicity of the revolts. These rebellions began over specific issues, such as objections to seignorial monopolies, and soon broadened to include a variety of general objectives, such as urban political and fiscal autonomy. The burghers intended to control the market and to break the power of the bishops to set prices, coin money, and otherwise dominate the economy. To achieve these ends, the burghers

organized brotherhoods (*hermandades*) to oppose the lords, in armed struggle when necessary.⁽⁶⁵⁾

Toward the end of the twelfth century, recurrent monetary crises in the western kingdoms provided an opportunity for burghers to increase their economic and political leverage, particularly since the kings were able to use them as a countervailing force against the nobility. When royal income failed to meet the fiscal needs of the kingdom, it was customary for the king to call in silver and to reissue debased coins with the same face value. Middle-class resistance to this practice led the towns to intervene in meetings of royal councils, which led to their expansion to include burghers along with the noble and ecclesiastical estates in the Cortes of León (1188), Castile (ca. 1200), and in the rest of the peninsular kingdoms during the course of the thirteenth century.⁽⁶⁶⁾

But Castilian burghers were not only opposing noble interests. In certain areas of governance they were in fact superseding nobles, while at the same time forging matrimonial alliances with the lower nobility as the first step in acquiring such title themselves. Teofilo Ruiz's studies of bourgeois families in twelfth- and thirteenth-century Burgos make this pattern clear. There, we note such families as the Sarracin and Bonifaz using personal fortunes gained in the importation of cloth from Flanders, Brabant, and England to gain positions of authority in the municipal government, in the royal administration (e.g., appointment as moneyers), and in the church. Ruiz concludes that the upper strata of Castilian bourgeoisie, far from failing to establish the power of their class, were, in effect, "too successful" in that, by the mid-fourteenth century, they had entered the lower nobility. In this process, the reign of Alfonso X was a watershed. Alfonso took measures to limit the power of the nobles and at the same time to enhance that of the *caballeros villanos* by granting them tax exemptions, as a result of which the latter were able to acquire municipal offices. At the same time, the petty bourgeoisie (the master craftsmen, *hombres buenos*) were effectively disenfranchised, leaving municipal power in the hands of this new nobility.⁽⁶⁷⁾ The rise of the [160] *caballero villano* (discussed in section 5, below) is perhaps the most distinct aspect of medieval Castilian social structure.

The incipient middle class of the Christian kingdoms was, in its early stages, ethnically heterogeneous, including not only local families, but *francos*, Mozarabs and Jews as well. The latter appear to have emerged early, on a near-equal basis with other bourgeois sectors. Around A.D. 1000 there was a prosperous Jewish colony in Barcelona whose members seem to have invested their commercial property in dispersed landholdings. The same is true of the early Jewish community of León, where residents of the *castrum judeorum* were engaged in commerce (some, for example, were in the employ of the commercial house of Menéndo González, engaged in the silk trade) in the eleventh century and appear in the twelfth as owners of agricultural parcels dispersed over a wide area in the vicinity of the town and held mills on the Bernesga and Torío rivers.⁽⁶⁸⁾

A symbol of the economic value of these communities was the high wergild placed upon Jewish individuals, the equivalent in many cases of a noble's. This is not an example of tolerance, however, so much as the recognition by the nobility who profited from Jewish commerce that Jews had to be protected from harm in order for them to pursue their trade in a hostile social environment. From a position of juridical near-equality with Christians

in Fueros of the late tenth and early eleventh centuries, the social status of Jews progressively deteriorated as anti-Jewish strictures were introduced, beginning in the mid-eleventh century.⁽⁶⁹⁾ It seems clear that the worsening situation of Jews is a reflection of the growth of a Christian middle class which came increasingly to resent Jewish economic competition and legal prerogatives. Jews then began to be squeezed into their familiar role as money-lenders, a development which increased tensions until relief from Jewish debts became a common cry in the Cortes.

5. The Nobility and Social Mobility

To a considerable extent, the structure of medieval aristocracies, whether Christian or Muslim, was inherent in the nature of agnatic kinship. In both societies noble status was adscripted, although the force of adscription may have varied. In al-Andalus, those tribes that had been prominent in Arabia (Arabs) or in North Africa (Berbers) tended to remain prominent, although, with the passage of time, the creation of urban, non-tribal power centers, and the swamping of tribesmen by masses of converts, [161] created a more fluid situation, whereby individuals whose tribal roots were weaker or entirely fictive could achieve high status. The pattern in Christian Spain was the opposite. There the social fluidity of the early middle ages appears to have impeded the formation of strong blood solidarities until the thirteenth century, after which time noble status became strongly agnatic in character.⁽⁷⁰⁾

There are two basic characteristics of the Christian nobility which bear special comment. The first is their ability to control resources; over a comparatively short span of time this allowed them to convert vast areas formerly the province of smallholding freemen into seignorial preserves. The second is the nature of the internal stratification of the class, whose lower strata were surprisingly permeable to the inclusion of new stock.

Aside from the agnatic character of noble families, what primarily characterized them was their ability to control resources, both human and natural, through the exercise of immunities, taxation, and monopolies.⁽⁷¹⁾ In the ninth through eleventh centuries one notes the steady growth of seignorial domains, the ecclesiastical estates growing quickly in wealth and power owing to pious donations, with the lay aristocracy gaining at a consistent, but markedly slower, rate. That gains in lay seignorialization came only slowly is best symbolized by the fact that the balance of power did not shift decisively from the monarchy to the nobility until the great conquests of the thirteenth century, as a result of which seignorial forms of political control were institutionalized in the newly conquered territories.⁽⁷²⁾ Nevertheless, the growing marshalling of economic resources by the nobility is much in evidence by the late tenth century: direct or indirect (through the ability to levy taxes in kind) control over iron mines, and the typical medieval pattern of monopolies over mills and ovens (the latter a point of conflict between nobles and burghers).⁽⁷³⁾

The second point of distinctiveness is the permeability of the lower echelons of nobility by upwardly mobile burghers. The noble estate was internally stratified into a higher class of magnates (*maiores*) and a lower one (*minores*) -- the *virii nobiles* of tenth-century Catalonia, the *infanzones* of Castile and León. This lower class was distinguished by its lack of wealth and by its close vassalatic dependency, on the counts in Catalonia, the king in the

Asturleonese and successor kingdoms. In Catalonia of the tenth century, a noble of this class was typically chatelain of one castle; in León, his patrimony was based on personal *presuras* of his family, and Sánchez-Albornoz has demonstrated the modest dimensions of such [162] holdings. The power of *infanzones* derived not from their personal patrimony but from feudal exemptions and from salaries paid them as soldiers. In a legal sense, the rights of high and low nobles were essentially the same.⁽⁷⁴⁾ The exigencies of constant warfare made it possible for wealthier townsmen to fight as knights and quickly gain a quasi-noble status. Thus one notes the rise of the *caballero villano* or *ciudadano* in tenth-century León, forming a distinctive sub-class that grew more numerous with time. Once burghers acquired enough money to maintain horses and to fight as knights, they received the perquisites of knighthood -- notably exemption from dues -- which enhanced their financial position and enabled them to begin to control municipal councils by the end of the twelfth century. In the northern towns, as already noted, *caballeros villanos* retained their commercial interests, whereas closer to the frontier, in the towns of New Castile, they appeared as cattlemen.⁽⁷⁵⁾

Not only burghers, but also rural freeholders, were able to benefit from opportunities offered by the frontier and by the spoils of war in order to better their social positions. Sánchez-Albornoz notes the rise of Castilian free proprietors to the status of *infanzón* in the Duero Valley of the late tenth century and, a century later, the wholesale creation of lower nobility from the ranks of foot soldiers in order to bolster mounted forces. This phenomenon is apparent in the *Poema de mio Çid*, where the hero gives land in Valencia to his men and makes knights of those who had fought on foot.⁽⁷⁶⁾

This kind of nobility was not unknown in other parts of Europe. In Anglo-Saxon England, for example, it was recognized that a man of non-noble birth could "thrive to thegnhood." What distinguishes this phenomenon in the Castilian orbit is its apparent massiveness and also the multiplicity of stimuli encouraging upward mobility: the abundance of land on a constantly expanding frontier, a chronic shortage of labor, urbanization, the military needs of states fighting the Muslims, the spoils of war. In this way, the freedom of the small rural proprietor and that of the town-dweller were ultimately exercised. Either one used that freedom to attain noble status through one of the available avenues, or freedom was lost.

By the thirteenth century the lower nobility of *caballeros villanos* and *infanzones* comprised the bulk of the mounted units fighting in southern Spain, and the military unit was easily converted into a settlement unit once the fighting was over. It was at this point that the more evolved seignorial structures which had grown slowly in the north were [163] instituted in the south, not only in the formation of great estates granted to magnates and military orders, but, even more significantly, in the creation of small seignorial domains in urbanized areas and in the irrigated zones surrounding them. This was accomplished as a result of royal policy, as in Murcia, where James I wanted to create a cohesive ruling and military class for the defense of the territory and where an *hombre de valor* was granted an estate comprised of a minimum of one hundred *tahullas* (the irrigated land measure).⁽⁷⁷⁾ Further discussion of the Christian nobility is reserved for the discussion of feudalism, in Chapter 6 below.

Analysis of nobility in Muslim Spain has been subsumed in our discussion of Arab and Berber kinship systems. Two major differences between Islamic and Christian society must be mentioned here, however. First, as Guichard makes clear, power in Islamic societies resided in lineage and not in land and, as a result, the Islamic states that faced the Christian onslaught had difficulty in forming a cohesive military class.⁽⁷⁸⁾ The genius of the feudal system of relations was that it wedded lineage, wealth, and the obligation to fight, forming a close-knit system whose basic link had become, by the thirteenth century, the grant of land. The Christian frontier advanced as a structured unit (more sharply structured with the passage of time) against which a society whose main ligaments were still tribal, and weakly tribal at that, could offer little cohesive resistance. This situation was further exacerbated by the replacement, beginning in late Umayyad times, of a blood nobility by a service nobility (the so-called "Slavs"), which further weakened the military capability of the society. Indeed, strong resistance was offered only when the peak of society was effectively tribalized, as a result of the Almoravid and Almohad invasions, which featured the implantation of Berber armies, fighting in tribal units. The devolution of fighting capability was a concomitant of urbanization, detribalization, and the domination of society by converts who had never formed part of a tribal structure. This was a common pattern in the states of the Islamic East, none of which, however, had to face the peril of permanent conquest by a non-Muslim enemy.

Finally, there were enough points of contact between Christian and Muslim nobility to suggest that both the values and the social structure of the two groups were similar enough to make each at least recognizable to the other. Throughout the high middle ages Christian *desnaturados* and exiles sought refuge and were warmly received in al-Andalus by their noble counterparts in whose houses they resided and in whose armies they [164] did battle. The stays of Alfonso VI in Toledo, his brother García in Seville, and the Cid in Zaragoza were typical. "To live among Moors was the ineluctable destiny of every exile," Menendez Pidal has observed.⁽⁷⁹⁾

Such alliances seemed normal to Christians, but scandalized the Muslim masses, especially after 1085, when Christian pressure upon Islamic territory seemed relentless.⁽⁸⁰⁾ When, as a result of conquest, Muslim nobles ended up under Christian rule these aristocrats seem to have had fewer problems of assimilation than did their correlegionaries of lower status. Thus Christian knighthood was conferred upon loyal Muslim allies, according to chivalric ideals shared by both groups.⁽⁸¹⁾

Notes for Chapter 6

1. On class versus status stratification in medieval Islam, see Guichard, *Al-Andalus: Estructura antropológica de una sociedad islámica en occidente*, p. 276, where he states that the most important divisions in society were ethnic; Bryan S. Turner, *Weber and Islam: A Critical Study* (London: Routledge and Kegan Paul, 1974), p. 93; Chalmers, *Señor del zoco*, p. 14; Goitein, *Mediterranean Society*, I: 76, 80; and, as an example of a successful class analysis by an Islamist, Ira M. Lapidus, *Muslim Cities in the Later Middle Ages* (Cambridge, Mass.: Harvard University Press, 1967).
2. Archibald R. Lewis, "The Midi, Buwayhid Iraq, and Japan: Some Aspects of Comparative Feudalisms, A.D. 946-1055," *Comparative Studies in Society and History*, 11 (1969), 47-53.
3. See my discussion of the deficiencies of Castro's analysis, Chapter 9, section 4, below.
4. Sánchez-Albornoz, *España: Un enigma histórico*, II: 8, 44.
5. Guichard, *Al-Andalus*, pp. 60-65, 81. 217.
6. *Ibid.*, pp. 204-205.
7. *Ibid.*, p. 262; Robert Montagne, *The Berbers: Their Social and Political Organisation*, David Seddon, trans. (London: Frank Cass, 1973), p. 46.
8. On the clan, see Guichard, *Al-Andalus*, pp. 256, 463; Montagne, *Berbers*, pp. 30-31; David M. Hart, "Segmentary Systems and the Rule of 'Five Fifths' in Tribal Morocco," *Revue de l'Occident Musulman et de la Méditerranée*, 3 (1967), 69-95.
9. Guichard, *Al-Andalus*, pp. 423-424, 430-440.
10. Oliver Asín, "En torno a los orígenes de Castilla," pp. 352-353, 378.
11. Hart, "Segmentary Systems," *passim*.
12. J. David Seddon, "Local Politics and State Intervention: Northeast Morocco from 1870 to 1970," in *Arabs and Berbers*, Ernest Gellner and Charles Micaud, eds. (London: Duckworth, 1972), pp. 122-123; Raphael Patai, *The Arab Mind* (New York: Scribner's, 1973), pp. 215-218, 226; Ernest Gellner, "Introduction," in *Arabs and Berbers*, p. 19.
13. Guichard, *Al-Andalus*, pp. 328, 354, 363, 531-532, 544-547, 275, 282, 20. On the grape-leaf incident, see R. Dozy, *Spanish Islam: A History of the Moslems in Spain*, Francis Griffin

Stokes, trans., new impression (London: Frank Cass, 1972), p. 66, and comments by Guichard, p. 325, and Patai, *The Arab Mind*, p. 217. On moieties in eleventh-century al-Andalus, see Urvoy, "Etude sociologique," p. 259. Guichard (p. 489) believes that this particular aspect of group feeling (as in the writing of pro-Mudari poems in the late tenth century) was an "aristocratic pretense," devoid of real social meaning.

14. Turner, *Weber and Islam*, p. 30; Guichard, *Al-Andalus*, pp. 487-488.

15. Guichard, *Al-Andalus*, pp. 18-19, 490.

16. Barbero and Vigil, *Orígenes sociales de la reconquista*, pp. 30, 171-172, 187.

17. *Ibid.*, pp. 185, 194; cf. Guichard, *Al-Andalus*, p. 262.

18. Ramón Menéndez Pidal, *La España del Cid*, 5th ed., 2 vols. (Madrid: Espasa-Calpe, 1956), I: 94; Marc Bloch, *Feudal Society*, L. A. Manyon, trans. (London: Routledge and Kegan Paul, 1961), p. 138; *El Fuero de Jaca*, Mauricio Molho ed. (Zaragoza, C.S.I.C., 1964), p. 72.

19. Ruiz Domenec, "Una etapa en la ocupación del suelo," pp. 505, 507. On bilaterality, see Guichard, *Al-Andalus*, pp. 127, 141, and *idem*, "Les arabes ont bien envahi l'Espagne: Les structures sociales de l'Espagne musulmane," *Annales*, 29 (1974), 1496-1497.

20. Menéndez Pidal, *España del Cid*, I: 21; Barbero and Vigil, *Orígenes sociales de la reconquista*, p. 187.

21. Ruiz Domenec, "Una etapa en la ocupación del suelo," pp. 492, 507; Bonnassie, *La Catalogne*, I: 280-281. Bonnassie ("A Family of the Barcelona Countryside," p. 117) notes that *large* families (such as those which felt the economic disadvantages of partible inheritance) were not necessarily *extended*.

22. Bonnassie, *La Catalogne*, I: 288, and "A Family of the Barcelona Countryside," pp. 117-118. Guichard, "Les arabes ont bien envahi l'Espagne," p. 1,499, notes that endogamy was present in Christian Spain, but was never systemic.

23. Guichard, *Al-Andalus*, pp. 257, 474; Barbero and Vigil, *Orígenes sociales de la reconquista*, p. 194.

24. On marriages of the Banû Qâsi, see Guichard, *Al-Andalus*, pp. 231-234. In agnatic society, strong groups typically receive from, but do not give women to, alien groups.

25. Bloch, *Feudal Society*, p. 142.

26. Guichard, *Al-Andalus*, pp. 134-138.

27. Pedro Díaz Cassou was the first to notice the social implications of the Beni-names of secondary canals: *Ordenanzas y costumbres de la huerta de Murcia* (Madrid, 1889), pp. 54-55.

See Glick, *Irrigation and Society*, p. 163. More recently, Julio Caro Baroja notes the same phenomenon as an enduring factor in the social organization of irrigation in Murcia and the Ebro Valley: "Cortes de Navarra. El Ebro como eje," *Revista de Dialectología y Tradiciones Populares*, 25 (1969), 76-79, and "Mundos circundantes y contornos histórico-culturales," *ibid.*, 29 (1973), 45-46. See comment by Guichard, *Al-Andalus*, p. 420.

28. Claudio Sánchez-Albornoz, "Pequeños propietarios libres en el reino asturleonés. Su realidad histórica," in *Investigaciones y documentos sobre las instituciones hispanas*, p. 178.

29. On free settlers, *ibid.*, p. 179; and the same author, *Despoblación y repoblación del valle del Duero*, p. 283, and "Repoblación del reino asturleonés," pp. 304, 317.

30. Sánchez-Albornoz, "Pequeños propietarios libres," p. 185. Cf. Bonnassie, *La Catalogne*, I: 307, on collective ownership of pastures.

31. *Poema de mio Cid*, Colin Smith, ed. (Oxford: Clarendon Press, 1972), p. 102:

Quien nos darie nuevas de mio Qid el de Vivar
Fuesse a Rio d'Oyirna los molinos picar
e prender maquilas commo lo suele far
Quil darie con los de Carrion a casar?

Translation is that of Harold Sutherland in Menéndez Pidal, *The Cid and his Spain*, new impression (London: Frank Cass, 1971), p. 66. *Maquila*, an Arabism (from *makīla*, a dry measure for grain) was a due collected in kind; see Neuvonen, *Arabismos del español*, p. 41. *Picar* has the technical sense of dressing mill millstones in order to restore their coarseness; see below, Chapter 7, section 4(a).

32. Sánchez-Albornoz, *Despoblación y repoblación del valle del Duero*, pp. 286, 336-338 n. (mills), 285 (water); *idem*, "Repoblación del reino asturleonés," pp. 412 n. 41 (mills), 279-280 (water); *idem*, "Pequeños propietarios libres," pp. 183-184, 194; Gautier-Dalché, "Moulin à eau," pp. 339-340, 344, 346; Bonnassie, *La Catalogne*, I:307 (water).

33. Bonnassie, "A Family of the Barcelona Countryside," p. 112; García de Cortázar, *San Millán de la Cogolla*, p. 85. Cf. Carlé, "Migraciones de corto radio," p. 134, on size of hamlets in Toledo and Soria. A *villa* of forty men was considered unusually large; Sánchez-Albornoz, *Despoblación y repoblación del valle del Duero*, p. 341 n. 139.

34. García de Cortázar, *San Millán de la Cogolla*, pp. 228-229, 234; Luis G. de Valdeavellano, "Las instituciones feudales en España," in F. L. Ganshof, *El feudalismo* (Barcelona: Ariel, 1963), p. 299; Sánchez-Albornoz, *Despoblación y repoblación del valle del Duero*, p. 320. On duties of peasants with emphyteutic contracts, see *idem*, "Repoblación del reino asturleonés," p. 321.

35. García de Cortázar, *San Millán de la Cogolla*, p. 230 n.111.

36. Sánchez-Albornoz, "Pequeños propietarios libres," p. 178.

37. On *homini excusi*, see Sánchez-Albornoz, *Despoblación y repoblación del valle del Duero*, p. 340; Moreta, *San Pedro de Cardena*, p. 162; and Carlé, "Migraciones de corto radio," pp. 131-132.

38. Carlé, "Migraciones de corto radio," pp. 125-129.

39. Ruiz Domenec, "Urban Origins of Barcelona," pp. 284-285. Sánchez-Albornoz, "Repoblación del reino asturleonés," p. 426; García de Cortázar, *Epoca medieval*, pp. 224, 273, 276, and *idem*, *San Millán de la Cogolla*, pp. 229, 236. See also, Pallares and Portela, *Bajo valle del Miño*, p. 31, and Reyna Pastor de Togneri, *Del Islam al cristianismo: En las fronteras de dos formaciones económico-sociales: Toledo, siglos XI-XIII* (Barcelona: Peninsula, 1975), p. 108.

40. Sánchez-Albornoz, "Las behetrias: La encomendación en Asturias, León y Castilla," in *Estudios sobre las instituciones medievales españolas*, pp. 74-83, 87, 92.

41. See George C. Homans, *English Villagers of the Thirteenth Century*, reprint ed. (New York: Russell and Russell, 1960), pp. 235-239.

42. Pastor, *Conflictos sociales*, p. 64.

43. *Ibid.*, p. 191.

44. Hussain Mones, "Le role des hommes de religion dans l'histoire de l'Espagne musulmane jusqu'à la fin du Califat," *Studia Islamica*, 20 (1964), 56.

45. See Guichard, *Al-Andalus*, p. 114.

46. J. M. Lacarra, "La reconquista y repoblación del valle del Ebro," in *La reconquista española y la repoblación del país*, pp. 71, 78; Burns, *Islam under the Crusaders*, pp. 102-104; González Palencia, "Riegos de Veruela," p. 83; Pastor, *Del Islam al cristianismo*, pp. 49, 75. Pastor asserts that the Neo-Muslim peasant as *sharík* was better off than his predecessor under the Goths and that this explains the impetus to conversion. But this kind of mechanism was only marginally involved in the conversion process (see Chapter 5, section 4, below).

47. Chalmeta, *Señor del zoco*, p. 107; Oliver Asín, "En torno a los orígenes de Castilla," p. 353.

48. Sánchez-Albornoz, "Las behetrías," pp. 69-73, 85-86. In some cases, the *maulado* had to pay his own wergeld; in others, the lord paid, giving the impression that some *maulados* were technically more free than others.

49. Lévi-Provençal, *España musulmana. Instituciones y vida social*, pp. 117-118.

50. Valdeavellano, *Sobre los burgos*, pp. 74, 83, 117, 129, 131.

51. Pastor, *Conflictos sociales*, pp. 106, 115, 179.

52. Pastor, *Del Islam al cristianismo*, p. 46.

53. This is the conclusion reached by Teófilo Ruiz in a series of important articles on the bourgeoisie of Burgos (see n. 67, below). The notion that Castilian cities lacked a middle class is also attacked by José Ignacio Gutiérrez Nieto, "La estructura castizo-estamental de la sociedad castellana del siglo XVI," *Hispania*, 33 (1973), 532-533, who notes the development of secondary and tertiary sectors in even small towns by the late middle ages.

54. Goitein, in particular, is insistent on the role of merchants as bearers of Islamic culture: *Studies in Islamic History*, pp. 215, 219. On the impact of the commercial milieu on law, see *ibid.*, p. 243.

55. Ibn al-Zubair, *Silat al-Sila*, E. Lévi-Provençal, ed. (Cairo, 1938), nos. 11, 13; ibn al-Abbâr, *Kitâb al-Takmila li-kitab al-sila*, Francisco Codera, ed. (Madrid, 1887), no. 1810. The function of religious education became that of confirming high socio-economic status, or of achieving it; see Bulliet, *Conversion to Islam*, chapter 11.

56. Mones, "Hommes de religion," pp. 69-74.

57. Urvoy, "Etude sociologique," p. 238.

58. Abdel Magid Turki, "La vénération pour Mâlik et la physionomie du Malikisme andalou," *Studia Islamica*, 33 (1971), 58-62.

59. The tracing of scholarly genealogies is Urvoy's method of analysis in the study cited in n. 57. Cf. also Figure 3 in Chapter 7, below.

60. A. I. Rozi, work in progress.

61. Bonnassie, *La Catalogne*, I: 495; Ruiz Domenec, "Urban Origins of Barcelona."

62. Valdeavellano, *Sobre los burgos*, pp. 59, 64, 68, 131; Ubieto, *Ciclos económicos*, p. 128.

63. Lacarra, "Repoblación de las ciudades en el camino de Santiago," p. 469.

64. Represa, "Genesis y evolución urbana de la Zamora medieval," p. 535; Pastor, *Conflictos sociales*, pp. 75-76; Lladonosa Pujol, "Proyección urbana de Lérida," p. 197.

65. Pastor, *Conflictos sociales*, pp. 34-35, 58, 86.

66. See Sánchez-Albornoz, "Primitiva organización monetaria," p. 474, and *España: Un enigma histórico*, II: 90.

67. Teófilo Ruiz, "Prosopografía burgalesa: Sarracín y Bonifaz," *Boletín de la Institución Fernán González*, 185 (1975), 467-499, and "The Impact of the Conquest of Seville on Castilian Society, 1248-1350," typescript.

68. Bonnassie, *La Catalogne*, I: 493; Justiniano Rodríguez Fernández, *La judería de la ciudad de León* (León: C.S.I.C., 1969), pp. 29, 57.

69. Nilda Guglielmi, "Cambio y movilidad social en el cantar de Mio Cid," *Anales de Historia Antigua y Medieval*, 12 (1963-65), 47; cf. Sánchez-Albornoz, *Espana: Un enigma histórico*, I: 290. See also García de Cortázar, *Epoca medieval*, p. 272.

70. This assertion, somewhat hyperbolic, is that of Pastor, *Conflictos sociales*, p. 49.

71. Guglielmi, "Cambio y movilidad social," p. 44, is correct in insisting that taxes and exemptions were the key to distinctions (both real and legal) between the classes.

72. See Sánchez-Albornoz, "Repoblación del reino asturleonés," p. 426, and *España: Un enigma histórico*, II: 88.

73. Gual Camarena, "El hierro en el medioevo hispano," p. 279; García de Cortázar, *San Millán de la Cogolla*, p. 253; Pallares and Portela, *Bajo valle del Miño*, pp. 28-29; Ubieto, "Los 'Votos de San Millán,'" p. 324; Pastor, *Conflictos sociales*, p. 55.

74. Bonnassie, *La Catalogne*, I: 283ff., 318; Sánchez-Albornoz, "Repoblación del reinoasturleonés," pp. 402, 404-405, 407; García de Cortázar, *Epoca medieval*, p. 277.

75. Sánchez-Albornoz, *Estampas de vida en León*, pp. 78-79, and *España: Un enigma histórico*, II: 52; Pastor, *Conflictos sociales*, pp. 164, 189-90. Cf. Valdeavellano, *Sobre los burgos*, p. 156, on the concentration of *caballeros* in frontier towns.

76. Sánchez-Albornoz, *Despoblación y repoblación del valle del Duero*, p. 320: *Damus foro bonos ad illos caballeros, ut sint infanzones* (974); *idem*, *España: Un enigma histórico*, II:49, citing *Poema de mio Cid*, lines 1,212-1,215:

quando mio Çid gaño a Valencia
y entro en la çibdad;
los que fueron de pie cavalleros se fazen,
el oro e la plata quien vos lo podric contar?
Todos eran ricos quantos que alli ha.
Poema, Colin Smith, ed., pp. 39-40.

77. José M. Font y Rius, "La reconquista y repoblación de Levante y Murcia," in *La reconquista española y la repoblación del país*, P. 104; Torres Fontes, *Repartimiento de la huerta y campo de Murcia*, pp. 86, 97; *idem*, "Jaime I y Alfonso X," p. 333.

78. Pierre Guichard, "Un seigneur musulman dans l'Espagne chretienne: Le 'Ra'is' de Crevillente (1243-1318)," *Mélanges de la Casa de Velazquez*, 9 (1973), 323.

79. Menéndez Pidal, *España del Cid*, I: 31, 170, 176-178, 279-285; on the point generally, see Valdeavellano, "Instituciones feudales en España," pp. 253-254.

80. Dominique Urvoy, "Sur l'évolution de la notion de gihâd dans l'Espagne musulmane," *Mélanges de la Casa de Velazquez*, 9 (1973), 339.

81. Burns, *Islam under the Crusaders*, p. 310. Burns also alludes to the well-known practice of Andalusí knights outfitting themselves in the Christian style; earlier, the Christian captors of Zaragoza had arrayed themselves in Muslim style. In both cases, there may have been motives for emulation related as much to perceptions of superior military technology as to style and social prestige. For a Muslim noble family in the Christian feudal structure, see Guichard, "Un seigneur musulman," *passim*; such arrangements, though socially congruent, were transitory.

ETHNIC RELATIONS

1. Ethnic Cleavages and Cultural Boundaries

[165] Much of the drama and vigor that typified social relations in medieval Spain resulted from the fact that the peninsula possessed a degree of ethnic diversity unknown elsewhere in Europe. This drama was a function, in part, of the degree of cultural difference separating groups, and, in part, of the social, economic, and demographic force of each of the peoples involved. In al-Andalus, the Muslim majority was composed of three powerful groups: the Arabs, a numerically slight but powerful, dominant elite; the Berbers, outnumbering the Arabs, and powerful militarily; and the Neo-Muslims, *muwalladûn*, eventually the majority of the population. Political life in Islamic Spain throughout the high middle ages was conditioned by the balance of power among these three culturally distinctive groups. In addition, there were two very large non-Muslim religious minorities, the Christians (Mozarabs) and Jews, who played social and economic roles that were not insignificant. In Christian Spain, from the late eleventh century on, conquest entailed the ingestion of large Muslim and Jewish enclaves whose role in society, by virtue of numbers and economic function, was significant.

In general, the historiography of intercultural relations in medieval Spain suffers from two basic misapprehensions. The first is that ethnic conflict and cultural diffusion are mutually exclusive phenomena. Accordingly, those historians who tend toward a conflictive view of the Spanish middle ages either play down the positive features of culture contact or are forced to look for lulls in the storm, necessary in this view for cultural borrowing to occur. The second fallacy is to equate acculturation (a cultural process) with assimilation (a social one) and to assume that the lessening of cultural distance must perforce result in the diminution of social distance -- to confuse ethnic with social cleavages without realizing that these can be cross-cutting. From this fallacy follow a large number of generalizations concerning the cultural fusion of ethnic groups in alAndalus which political facts seem to contradict. In any case, in both Islamic and Christian societies relations among ethnic groups and [166] between members of dominant and minority religions were sharply structured, according to both formal and informal rules and conventions. It is the aim of this chapter to identify patterns of intergroup relations based primarily on ethnic cleavages and to understand how these related to social stratification in the society at large.

Medieval people, whether Christians, Muslims, or Jews, perceived ethnicity largely in terms of religious affiliation. In religiously heterogeneous societies, such as al-Andalus, or Castile (after 1085), religious minorities were perceived as ethnically differentiated units, no matter what the level of their general acculturation to dominant norms may have been. Looking at the broader picture of Christian-Muslim confrontation, Christians perceived an absolute dichotomy, of an ethnic nature, between the *moro* (that is, the Andalusí Muslim, whether

Arab, Berber, or Neo-Muslim, white or black) and the *cristiano* (as an ethnic category, a speaker of Romance from the north of Spain). Among the Muslims, one notes the same foreshortening of ethnic recognition: the Christian enemy was an unbeliever (*kâfir*) or a polytheist (*mushrik*), a supra-ethnic category which was a sufficient and universal definition.

Before the advent of modern nationalism, which accentuated the role of language in ethnic ascription, linguistic differences, although certainly noted, were not considered an insurmountable bar to assimilation.⁽¹⁾ The general acceptance of Latin as a lingua franca among all Christians and of Arabic among all Muslims created an atmosphere in which, for example, Romance dialectalisms were accepted as variants all more or less equidistant from the norm. In the ethnically plural societies of the peninsula, linguistic differences were accepted as part of the cultural landscape and accommodations easily made to minimize their role as barriers to communication, whether in politics or in the marketplace (for example, the generalized bilingualism of merchants; specialized officials who served as translators, scribes, and diplomats). On the other hand, languages inevitably picked up connotations arising from ethnic conflict -- for example, the use of the term *cristiano* in the sense of "Romance language," that spoken by Christians.

Figure 2 illustrates some of the nuances of ethnic ascription in medieval Spain, with regard to subordinate enclaves in each society. The primary reference point was religion, and the crucial differentiating factor was whether a group, after conquest, had remained faithful to its original religion or had converted. A second point of differentiation, more [167] important to Christians than to Muslims, was whether a person spoke a language different from that typically associated with his religious group. These terms, first by their very variety, indicate that there was a considerable range of socially recognized statuses along the roads to acculturation and assimilation, and, second, by their specificity, that such groups participated in a structured, patterned system of group relations. Another family of terms, not included in the figure, related to those people who fitted into no specific one of these groups but who were cultural commuters (or, with the negative connotations attached to such people, renegades) who passed back and forth between Islamic and Christian societies and had no particular allegiance to one or the other. That such people (called *enaciados* or *elches* -- the latter from Arabic *'ilj*, "renegade") existed at all was grating to the sensibilities of the times, which required that groups be plainly identifiable, by virtue of language, religion, tribal affiliation, and so forth.⁽²⁾ There follows from this mentality, amply documented below, that conversion *into* one's group was, theoretically at least, encouraged, while conversion *out* was forbidden and liable to harsh punishment [168]

2. "Protected" Religious Minorities

The Koran -- a syncretistic book with elements drawn from Judaism and Christianity -- envisioned a polity which was stratified along religious lines. This was an accurate representation of Arabian society in the time of Muhammad, when pagan Arab tribes coexisted with Christian and Jewish ones. Thus the Koran describes a society dominated by Muslims (assumed to be Arabs), with provision made for approved religious minorities, characterized as *dhimmis* ("protected" peoples) or "People of the Book" (those with a revealed scripture recognized by Muslims as divinely inspired -- that is, Christians and

Jews). When the Arabs burst forth from the Arabian peninsula and extended control over great numbers of non-Arab, non-Muslim peoples, they found themselves obliged to encompass this vast religious and ethnic diversity within the Koranic framework, as further defined and elaborated in the growing corpus of Islamic law.

The meticulous legal structuring of social and economic relationships between the dominant Muslims and the subordinate Christians and Jews who found themselves within the Empire underlies the generally harmonious interaction of religious groups in the Islamic middle ages. *Dhimmi*s suffered civil and legal disabilities in comparison with Muslims, but they also enjoyed the security that inhered in formal juridical status. Three ramifications of this status are particularly relevant to the situation of Christians and Jews in al-Andalus. First, by accepting status as *dhimmi*s, members of religious minorities were effectively excluded from participation in political power. Although, under special and always temporary conditions, Christians and Jews did attain considerable political power, the only way to achieve substantial upward mobility in the society at large was to convert to Islam. Second, the system had built-in inducements to assimilation in the form of tax incentives (exemption from the *jizya* or poll tax) for those who converted. Third, the formal recognition of religious differences meant that Islamic society sanctioned among religious minorities a relatively high degree of cultural enclosure. That is, by granting the persistence of the primary factor that made peoples distinct from one another --religion -- Islamic society put less pressure on religious minorities to accept its values than it placed upon non-Arab Muslims.

When the Christians came to determine what their own comportment would be towards religious minorities (a modest number of Jews before 1085, large-and increasing-numbers of Muslims and Jews thereafter) [169] they used the ready-made example afforded by Muslim treatment of *dhimmi*s. As in al-Andalus, the religious minorities were accorded legal safeguards which promised the maintenance of a relatively high degree of group autonomy (again, connoting the acceptance of strong cultural boundaries), reinforced by spatial segregation in *juderías* and *morerías* and a detailed law code defining intergroup relations. This system, in Christian guise, worked substantially less to the favor of the minorities than it had in its original form. The reason for the discrepancy, and the erosion of the social status of subject Jews and Muslims from the start, lies in the differing concepts of law prevailing in the two cultures. Islamic law, although subject to a relatively limited range of differing interpretations, was universal and unchangeable. The safeguards afforded to the People of the Book were the norm, and suffered erosion only at the hands of weak rulers, who permitted unlawful contraventions of minority rights, or of despots whose fanaticism led to direct contraventions of law.⁽³⁾

In the Christian kingdoms there was no general norm, except for vague guarantees of freedom of worship and group autonomy, but rather the rules were pacted with local groups by specific rulers and were subject either to ratification or change by each successive ruler. This meant that the actual situation of Jewish and Muslim minorities differed widely from place to place and was, moreover, highly sensitive to change in response to social and economic interest groups who were able to gain the ear of the monarch. The insecurity and precariousness inherent in such a situation accounted in great

part for the steady erosion of group cohesion among religious minorities under Christian control.

AUTONOMY, STRUCTURE, INSTITUTIONAL PARALLELISM

The intent of the *dhimma* arrangement and its imperfect Christian counterparts was to ensure that religious groups were kept separate, distinct, and apart from one another, lest the dominant religion suffer contamination from the subordinate ones. Here we can only cite a number of arrangements that were standard in both Islamic and Christian societies. The keystone of group autonomy was that each religious community would be ruled by its own body of religious law, in its own courts, by its own judges, chosen by the community itself. The jurisdiction of the autonomous communal courts was limited to civil cases involving members of the community both as plaintiff and defendant; those which involved a [170] member of the dominant religion generally had to be tried by a state judge, as did most criminal proceedings. Thus the religious courts handled cases involving all aspects of family law (marriage, divorce, inheritance) as well as other social and economic litigation falling under the purview of religious law.⁽⁴⁾ The autonomous religious court system had obvious cultural and social repercussions: the court was a fulcrum of group cohesion and served to reinforce the distinctive cultural traditions of the group. Thus, in Jewish courts in al-Andalus, Talmudic law interpreted according to the Babylonian school served as a mechanism to keep alive a particular form of Judaism and there, as throughout the Islamic world, communal authorities condemned (and even punished) recourse to Islamic courts.⁽⁵⁾ The Mozarabs also had an autonomous court system, with a judge (*censor*) who dispensed justice according to the *Forum Judicum* as well as, ostensibly, canon law.⁽⁶⁾

In Christian Spain, autonomous courts for Jews and Muslims were provided, but the tendency was to undermine, whenever possible, the prerogatives of the religious minorities in cases involving a Christian. Thus Alfonso VII decreed in 1109 that all suits between Christians and Jews in Toledo would be heard by a Christian judge, even when a Jew was defendant, a trend that was continued until in 1286 the Cortes of Palencia petitioned the king to deny the Jews any special judge at all, but should have an ordinary (that is, Christian) judge hear their pleas separately, so that Christians and Jews alike would have their due.⁽⁷⁾ Likewise, with autonomous Islamic courts, there was a range of solutions for the resolution of suits between Muslims and Christians, from autonomous judge, to special judge, to only a Christian judge (in Toledo).⁽⁸⁾ In thirteenth-century Valencia the formal structure of Islamic jurisprudence was maintained relatively intact, with *qâdî*, *amîn*, and *sâhibal-madîna* (the latter two were enforcement officers), and King Peter was explicit in his desire that "Saracens ought to fall under the jurisdiction of their qadi" (1284).⁽⁹⁾

The Christian law codes, whatever else their failings, seem to have been especially punctilious in defining the manner in which the correct oath should be given by people of the three religions. The Fuero of Calatayud specifies that in inter-ethnic cases a Christian must swear on the cross; the Jew, holding the Torah; and the Muslim, by repeating the words "I swear faithfully three times." The Fuero of Jaca specifies that in cases involving people of different religions, each must defend himself according to his own law, even in cases of assault, and, further, that agreements between [171] people of different religions

ought to be drawn up by the scribe of one religion or another, depending on the kind of issue.⁽¹⁰⁾ James I, who played a role in the revival of Roman law in the Kingdom of Aragón, also had clear notions of how Semitic law ought to function; he regarded the *sharī'a* (Islamic law in general) and the *sunna* (custom of the Prophet, but here understood as customary law in general, as opposed to canon or civil law) as still in force among the religious minorities. In the charter of Denia (1227) James defined *sunna* as the "privileges and customs which the Saracens were accustomed to have in the Kingdom of Valencia." He understood Jewish law in the same way, once referring to the "*sunna* of the Jews" (a characterization that reflects the strong Arabization of Spanish Jewish culture in the thirteenth century as well as the monarch's own confusion). In spite of these tolerant expressions, by the end of the century the system was beginning to show substantial erosion as basic principles such as the right to have witnesses of one's own religion were increasingly abandoned.⁽¹¹⁾

Although the court system and maintenance of religious law were the cornerstones of minority autonomy, there were other legally enforced social mechanisms designed to minimize intimate contact among peoples of different religions. Intermarriage was prohibited by both Christian and Jewish religious laws. The fact that Muslim men were allowed to marry infidel women contributed to the numerical attrition and sense of threat within the minority enclaves and heightened their own internal strictures against intermarriage. Castilian law codes stipulated harsh penalties for fornication between Christian women and Jewish or Muslim men (leaving unmentioned the license of Christian men to exploit minority women sexually).⁽¹²⁾

Dominant religious groups naturally provided harsh penalties for apostasy. The *Siete Partidas* provides the death penalty for the Christian who turns Jew or for him who, having lost his mind and desiring to live in the Moorish style, becomes a Muslim.⁽¹³⁾ Generally, the aversion to conversion to any but the dominant religion was extended to lateral conversion among the religious enclaves: for example, Islamic law forbade the conversion of Christians to Judaism (and vice versa), although Jews in fact continued to convert their slaves. The same stricture is found in the *Partidas*, where Jews are forbidden to convert their slaves or captives even when these were "Moors or other barbarian peoples." This stricture was in addition to the general provision that neither Jews nor Muslims should [172] proselytize Christians but should keep their own faith, without abusing that of the majority. Linked to the ban on proselytization were provisions, typical in all Castilian law codes, forbidding Christians to dwell in the same house with Muslims or Jews.⁽¹⁴⁾

The question of how much power a member of a religious minority might have over people of the dominant religion was subject to a range of legislative prescriptions, ranging from prohibition of holding a slave of the dominant religion, to the holding of public office, and the more complicated matter of economic relations, particularly lending money at interest. It was standard that no minority person be allowed to own a slave belonging to the dominant religion.⁽¹⁵⁾ As for public offices, the general pattern of the appointment of minority men to high rank, particularly in financial bureaus, through the personal patronage of a ruler and the objections to such procedures by religious leaders, on religious grounds, and by those of the dominant group who were competing for power with the favored officeholder, or those of the dominant religion who complained of the humiliation

suffered at the hands of such favorites, was common to both Islamic and Christian society. In the early Emirate, Mozarabs held positions of power: al-Rabî', the head of the Christian community of Córdoba, served al-Hakam I. As the power of *fuqahâ'*, the Muslim jurisprudential class, grew, that of the Mozarabs diminished. In the reign of Muhammad I, Christians were dismissed from the militia and their role as state officials dwindled. Jewish aristocrats, such as Hasdai ibn Shaprût, served the Umayyads in a variety of roles, typically as ambassadors and physicians.⁽¹⁶⁾

A special case of Jewish preferment arose in eleventh-century Granada, when two members of the ibn Nagrella family, Samuel and Joseph, served the Berber Zîrîd rulers as vizier. The power achieved by these two men was based on a precarious balance of power between the Berber rulers and the Arab elite in the kingdom. The Jews represented the economic strength of the middle class of Granada and rose to high office (the highest ever held by Jews in Islamic Spain) as a counterbalance to the Arab aristocracy. The Zîrîds, then, were able to maintain power by merging a Jewish-dominated fiscal and administrative apparatus with a strong Berber militia.⁽¹⁷⁾

In Christian Spain a similar pattern was evident. Jews served individual rulers, particularly as tax officials, in spite of protests by religious zealots and by those to whose interest Jewish domination was perceived as [173] threatening. Alfonso VI of Castile's preference for Jewish civil servants brought him a warning from the Pope in 1081 not to grant Jews positions of authority over Christians. Nevertheless, he appointed Joseph Ferrizuel ("Clidellus") and his nephew Solomon to a number of high positions later in the same decade. In Aragón, Yahya ben David of Monzón served Alfonso II (1162-1196) as a bailiff, and Sheshet b. Solomon ("Perfet") had served count Ramon Berenguer III (ca. 1121) in the same office. Such preferment was continually attacked, to no avail, especially in Castile, where various law codes reiterated the Visigothic prescriptions (of the Third and Fourth Toletan Councils) forbidding Jews to hold public office.⁽¹⁸⁾

Jewish power was increasingly related to involvement in financial transactions, particularly the lending of money. Medieval custom and religious law took a dim view of lending money at usury to a correlative. Jews could not take interest from other Jews, but they could from Christians or Muslims. The same, of course, was true of Christians, whose habitual recourse to Jewish capital needs no comment. Lending does not seem to have caused as many problems for Jews in the money economy of the Islamic world as it did in Christian Spain. Although money-lending did not become a pronouncedly Jewish activity in a place like Castile until the fourteenth century -- before which time Jews were engaged in a multiplicity of other economic pursuits as well -- the mention of two Jewish money-lenders from Burgos in the *Poema de mio Çid* confirms that this stereotype was firmly set by as early as the mid-twelfth century. The tolerated interest for Jewish loans, set by statute repeatedly in the second half of the thirteenth century, was thirty-three and one-third percent, which led early in the next century to repeated petitions in the Cortes for relief from debts owed to Jews.⁽¹⁹⁾

The involvement of Jews not only in money-lending but in a host of middle-class commercial and industrial activities made this group particularly susceptible to popular hostility in times of economic recession, leading Antonio Ubieto to use incidences of anti-

Jewish (or anti-minority) legislation and policies as a rough indicator of periods of economic decline. Thus Ubieto sees as symbolic of recession the persecution of Mozarabs during the reign of 'Abd al-Rahmân II; the persecutions of Christians and Jews in Córdoba (1013), Zaragoza (1039), and Granada (1066); the expulsion of Mozarabs by the Almoravids, concurrent with the currency devaluation of the 1120's; and anti-Jewish outbreaks in [174] Córdoba (1135) and Valencia (1144-1145). In Christian Spain, the depressions of the twelfth century brought increasing restrictions on Jewish activities and the general persecution of 1275 and anti-Jewish dispositions of the Cortes of 1301 and 1307 can also be related to economic recessions.⁽²⁰⁾

There are also general indices of the low esteem of religious minorities, such as the setting of the Jewish *wergild*, formerly at the level of a minor noble, at parity with that of a peasant (by Alfonso VII in 1109), as well as differential standards for punishment: in some *Fueros* murder was a capital crime for Jews and Muslims, but subject to only a fine for Christians.⁽²¹⁾

These examples, selected from among many, well illustrate the systemic aspects of minority relations in both Islamic and Christian Spain. According to prevailing norms, minority religions were kept at a distance from majoritarian society. The communal autonomy of these groups, often represented as the very symbol of tolerance, was in fact the institutional expression of ethnocentric norms which held such groups in abhorrence, as tolerated but alien citizens who were not to share in social life on the same basis as members of the dominant religion. It is clear that such institutionalized forms of enmity would not protect the minorities in the case of severe economic or social disruptions when, as perpetual outsiders, they easily became scapegoats. The point is made well by Robert I Burns, who remarks, apropos of Muslim minorities in Valencia, that "the tolerance that fully preserves an alien group's existence also condemns that group to a life apart, inverted, and undernourished, so strange to the other community as to seem repugnant and even inimical."⁽²²⁾

Further systemic ramifications of the semi-isolation of religious minorities are apparent in the effects of social segregation upon their culture. Communal autonomy and social segregation influenced the culture of the minority groups in two contradictory ways. The guarantees of group autonomy and the external pressures placed upon the group to maintain a relatively high level of group identity for purposes of control had definite solidarity-inducing effects upon the minority. On the other hand, second-class citizenship and the social, economic, and in some cases cultural, prestige of the dominant religion induced pressures for acculturation and for the abandonment of traditional norms. These ambivalent influences are well illustrated by comparing the cultural contours of the Jewish and Christian minorities in al-Andalus.

We can agree with S. D. Goitein that for Jews the possibilities for [175] acculturation were greater in the Islamic than in the Christian world because the high culture of the former was to a great degree secular in nature. Throughout the Islamic world, Jews had become completely Arabized in culture and in language by A.D. 1000. The result was that, in spite of legal restrictions already mentioned, not only did Jews participate fully in Arabic culture, but their own distinctively Jewish traits were invigorated and enhanced by creative

interchange. Thus, for example, both Hebrew secular poetry and philology were substantially revitalized by Andalusí Jews under the influence of and stimulus of Arabic poetry and grammar.⁽²³⁾ Moreover, much of Jewish philosophical and scientific scholarship was written in Judeo-Arabic (Arabic written in Hebrew characters), which developed into a rich vehicle for literary and scholarly writing, since it was not constrained, as normative classical Arabic was, by the model of Koranic language, which imposed conventional limitations upon Muslim prose writing. The social status of scholarship was also influenced by the Islamic milieu, in which both scholarly and commercial pursuits conferred prestige and were frequently combined in the same persons. The figure of the "learned merchant" as bearer and seeker of high culture on his far-ranging business trips was as characteristic of the Arabized Jew as of his Muslim counterpart.⁽²⁴⁾

Yet in spite of the great vigor of the cultural and economic life of Jews in al-Andalus and the infrequency of violent outbursts against them, the psychological burden of second-class citizenship weighed upon them as it did upon the Mozarabs. An Andalusí Jewish merchant writing around 1140 from Fez to his father in Almería (a hub of Jewish economic activity and also a place where, possibly as a consequence, anti-Jewish feeling ran high) that hatred of Jews "is rampant in this country to a degree that, in comparison with it, Almería is a place of salvation."⁽²⁵⁾ The subsequent Berber invasions had predictable consequences for the Jewish community.

When, as a result of those invasions (eleventh and twelfth centuries), the vast majority of the Andalusí Jews migrated to Christian Spain, their cultural position changed abruptly. Their secular culture was incongruent with the religiously oriented high culture of the Christians, as a result of which the disorientation of Jewish intellectuals was inevitable. A poignant example is Moses ibn 'Ezrâ, poet and courtier of Granada, who arrived in Castile in 1095, wandering from town to town. "I have come," he complained, "to the iniquitous domain of a people scorned by God and accursed by man, amongst savages who love corruption. . . ." Nurtured in [176] his youth in "the gardens of truth" (the Arabic culture of Granada), he was now obliged to "hew, in old age, the wood of forests and folly."⁽²⁶⁾

Others were able to make the transition on the basis of their mastery of Arabic culture. (The role of men of science will be discussed in a later section.) But those who served the Christian kings and princes (in this case, Sheshet Perfet) were described by Judah ibn Tibbon as having attained "fame and high rank only through the writing of Arabic."⁽²⁷⁾

Thus the very men who had felt, through their domination of Arabic cultural forms, part of Andalusí society had, when transferred to Christian lands, as a function of that very learning been reduced to the status of cultural go-betweens -- valuable for that to the Christians but condemned to ambivalence and insecurity in a cultural climate for which they had no feeling and in which they had, as yet, no creative role to play in and for themselves.

The Mozarabs, those Hispano-Romans who had not converted to Islam but who had remained in al-Andalus, formed substantial minorities in Córdoba, Toledo, and other large cities, as well as in many areas of the countryside. The extent of their Arabization is the subject of debate among historians. The centerpiece in the argument for their substantial

Arabization is a much-cited passage from the *Indiculus luminosus* of Paul Albar, which states that the Christian youths of ninth-century Córdoba were "highly regarded for their ability to speak Arabic," were conversant with Arabic literature, did not know their own law, nor could they speak their own tongue (Latin).⁽²⁸⁾ Yet, Albar's testimony is almost unique. Mozarabs created no Christian literature in the Arabic language (or at least none has survived), and their rather extensive Latin literature reveals a minimal interest in the knowledge of the Islamic society around them. An apt example of the cultural isolation of the Latin Mozarab writers is that their knowledge of the life of Muhammad came from a debased, distorted Latin version brought back from the monastery of Leyre in Navarre by Eulogius, who could have obtained more accurate information by asking any Muslim in the street. Based on an analysis of this literature, together with the fact that the term Mozarab (from Arabic *musta'rib* = "Arabized") first appears in Latin texts and seems not to have been used by Muslims, Vicente Cantarino argues that Mozarab was initially a pejorative term used by the fanatical leadership of the martyrdom movement to denigrate more highly acculturated Christians. In this view, the leadership purposely cultivated ignorance of Arabic-culture and, [177] because of its inability to interact creatively with Arabic culture, condemned the entire group to "historical irrelevance."⁽²⁹⁾

Cantarino's portrayal of a group actively resisting acculturation is undoubtedly true of a substantial segment of the elite. Other aspects of Mozarabic society, such as its receptivity to heterodox religious trends, also contribute to a picture of a culturally disoriented group. Yet, this cannot be the entire picture if only because the demands of the marketplace alone would have been a sufficient enough inducement for those Mozarabs who produced marketable goods (craftsmen and farmers) to have learned Arabic. In this respect evidence pertaining to Mozarab immigrants to León in the ninth and tenth centuries is relevant. The documents reveal a typical pattern, extending into the eleventh century, of men with Arabic names married to women with Romance names. Of fourteen mixed-name couples in a collection of charters from the Monastery of Ardón between 947 and 989, all but one manifest the pattern alluded to (e.g., Aiza and Argentea; Yahea and Filoria; Abuhab and Vistrildi; Zuleiman and Loba, etc.).⁽³⁰⁾

This pattern is what one would expect in a multicultural situation such as that prevailing in the areas of al-Andalus whence many of these settlers originated: men who were bilingual Romance and Arab speakers, women who were monolingual Romance speakers.⁽³¹⁾

Lacking the congruence with Islamic culture that enabled the Jews to acculturate rapidly, the Mozarabs adopted the language at a slower pace; but by the time Toledo was conquered in 1085 the indigenous Christian population was composed wholly of monolingual Arabic-speakers. Those who migrated to León earlier, needless to say, had no difficulty adapting to the prevailing cultural norms. Their role as bearers of elements of Islamic culture will be discussed in due course.

The cultural situation of the Mudéjares, the Muslim minorities in Christian Spain, is somewhat akin to that of the Mozarabs. The Mudéjares of the twelfth and thirteenth centuries appear uniformly unwilling to adapt to Christian culture. They attempted to maintain their language and traditional culture intact, in the face of ever-increasing pressures towards acculturation from the Christian authorities. In the period 1085-1300,

these pressures did not reach the level or have the impact achieved in later times, but in subtle ways the fabric of Muslim society under Christian domination was slowly altered, as traditional Islamic institutions -- whose survival was guaranteed under the terms of capitulation agreements -- were increasingly colored by, or impinged upon, by Christian practice. Thus village [178] elders, who played a distinct role in a tribally based social structure, were viewed by the Christian authorities as having the attributes of a town council, although there was no precedent for such a body in Islamic law. The Christians thus forced a new role upon the Muslim communities and institutionalized it.⁽³²⁾ The Mudéjares, perhaps because they were viewed as a fifth column, were subject as no other peninsular religious minority to formal pressures for cultural change, directed by the rulers -- a strategy which in the Islamic world was irrelevant to the *dhimma* contract and where the motivation for change originated largely within the minority communities themselves.

3. Ethnic Competition in al-Andalus

Although Islamic law made clear provision for the protected religious minorities, it did not spell out in any systematic or definitive way the status of ethnic groups who accepted Islam but resisted acculturation to Arabic norms. Anthropologists have noted that egalitarian creeds have generally proved ineffective in preventing ethnic stratification, and the Islamic experience bears out this conclusion. Although Islamic law envisioned a universal brotherhood of believers, in point of fact ethnically stratified social systems evolved in many regions of the Islamic world. The usual method of dealing with the assimilation of ethnic minorities was to accord the neophyte the status of client (*mawla*), whereby new converts (often entire tribal groups) would attach themselves to a powerful Arab family or tribe, adopting its lineage and social status.

In ethnically plural societies, access to power usually involves leaving behind the culture of one's original reference group and adopting that of the dominant group. But because they were Muslims, the ethnic minorities of the medieval Islamic world already had putative equality in the eyes of the law and, thereby, legal guarantees of access to power on a par with other believers. Therefore, in such areas as Persia, North Africa, and Islamic Spain, where Arabs were outnumbered by indigenous peoples of markedly different culture, political life was typified by competition for power among Muslim groups. One factor controlling success in competition was the ability of non-Arabs to master certain cultural and social skills associated with Arabs. As a result, cultural boundaries of ethnically differentiated, competing groups of Muslims tended to be more blurred than among non-Muslim groups, inasmuch as a certain degree of assimilation was prerequisite to success in inter-group competition.

[179] Thus in Islamic Spain, in addition to differentiation among groups along religious lines, with ethnic ramifications, the Muslims themselves were split into three groups, all with putative access to power according to the dictates of Islamic law: Arabs, Berbers, and Neo-Muslims. The demographic structure of the Muslim sector of Andalusī society virtually mandated intense competition among its components. The Arabs were a ruling, bureaucratic, and landholding elite, but were scant in numbers: Târiq's original invasion force of 12,000 men was said to include but seven.⁽³³⁾ Subsequent emigration under Umayyad impetus was mainly felt at the very top of society and could not have increased

the Arabs' demographic weight significantly. More numerous were the Berbers who joined the Arab command in North Africa and constituted the bulk of the invasion force. Despite the withdrawal of substantial numbers during the drought and famine of the 750's, fresh Berber migration from North Africa was a constant feature of Andalusí history, increasing in tempo in the tenth century. Hispano-Romans who converted to Islam, numbering six or seven millions, comprised the majority of the population and also occupied the lowest rungs on the social ladder. Yet, through the system of clientage, substantial upward mobility was possible, especially among the Neo-Muslim elite.

The political history of Islamic Spain from 711 until the collapse of the Caliphate has been typically portrayed as a steady and logical evolution of a new state from political infancy as a province of the Caliphate of Damascus, through an adolescent period as a fledgling emirate, to the mature and fully developed Caliphate, a culminating point whose fulfillment was interrupted and stymied by numerous revolts by dissident factions usually Berbers or Neo-Muslims, or coalitions of these with disaffected Arab groups. Emphasis on the attainment or obstruction of political stability tends to obscure the dynamics of the competitive ethnic system that the state sought to control. The failure of the Umayyad state can then be presented as the tumbling of a house of cards, a building whose structure was flawed, the rupture (in one historian's characterization) of the "fictitious equilibria" upon which the Caliphate was built.⁽³⁴⁾ This, indeed, is the popular wisdom. Ibn Khaldûn asserted at length that "a dynasty rarely establishes itself firmly in lands with many different tribes and groups."⁽³⁵⁾ Modern sociological intuition is more nearly the opposite: many centralizing states rule over a diversity of peoples and their success in ruling is greater when there are more rather than less cleavages. The fewer the number of powerful groups, the greater is the [180] possibility for conflict between them. Therefore, we shall argue that the equilibria among ethnic groups upon which the Umayyad state were based were unstable (although by no means unstructured) and not, for that, fictitious. Their reality accounts both for the political fortunes of the Caliphate and its ultimate demise. (See Chapter 6, sections 1 and 2.)

The line of differentiation between Arabs and Berbers is admittedly an indistinct one; or, at least, it became so in short order after the Arab conquest of North Africa, as certain Berber elements were quick to associate their destinies with that of the elite. The most visible cleavage was linguistic, involving distinct and unrelated language groups. The process of "Arabization" which began at this time involved the learning of the Arabic language and was much slower in pace than the associated process of religious conversion -- Islamization. The process was largely, but not completely, one-way, the rate of its progress varying according to political and social factors. For a moment in the eleventh century the direction of cultural flow was actually reversed, a case in point being the Hammûdid Arabs, pretenders to the Caliphate allied to the Zanâta Berbers, who were Berber-speakers and spoke Arabic with a Berber accent.

The fact that there are few Berberisms in Castilian and most Berber-derived place-names are derived from tribal appellations (including some in Old Castile, where Christian Berbers appear to have settled in the eighth century) has led to the general conclusion that there were no purely Berber-speaking centers in al-Andalus by the tenth century.⁽³⁶⁾ But such a conclusion is problematical. It is more likely that there was extensive bilingualism

and biculturalism among Andalusí Berbers. Instead, there must have been a range of acculturation. Those (relatively few) who lived in cities, the literate class, may have been totally Arabic-speaking. On the other hand, the Arabization of rural, isolated Berber nuclei in such mountainous backwaters as Teruel and Albarracín is improbable. So also, in those of the Party Kingdoms ruled by Arabized Berbers of long residence in the land (the Aftasids of Badajoz, the Dhu'l-Nûnids of Toledo) it seems probable that only the aristocracy and middle classes were fully Arabized, while the masses remained monolingually or bilingually Berber-speaking. Even if we assume substantial Arabization, there is ample evidence that acculturation did not bring with it any general lessening of social distance between Arabs and Berbers. We have already commented on the economic division of labor between the two peoples, and this was reinforced by social and religious differences.

[181] The ascription to the Berbers of religious heterodoxy was a key factor in the maintenance of social distance. Whether or not it was true, as ibn Khaldûn alleged, that the Berbers were guilty of repeated apostasy, such was the image generally held by urban Arabs. Moreover, certain forms of Berber heterodoxy, such as Khârijism, were linked to the issue of discrimination. The Khârijites insisted that the universalist ideology of Islam be put into practice, and they affirmed the non-Arabs could aspire even to the Caliphate. The Arab characterization of Berber religion as a corrupt, unorthodox, and heretical form of Islam was one rationale for the maintenance of social distance.

Cultural, linguistic, religious, and socio-economic cleavages manifested themselves in a series of Berber uprisings, conducted more or less against the central authority, which punctuated the history of the Umayyad state. These included the rising of Shaqya b. 'Abd al-Wahîd against 'Abd al-Rahmân I (768-777); of Asbag b. Wansus against al-Hakam I (805-813); and rebellions of Tawril and other tribes against 'Abd al-Rahmân II (822-852).⁽³⁷⁾

Any instance of Berber rebellion, or of political revolt in which Berbers participated as a recognized entity, must be taken as an indication of social distance, as well as of the relative cohesiveness of Berber culture at the time.

The political breakdown which occurred during the reign of 'Abd Allâh (888-912) is significant for the salience of group boundaries. This struggle was initiated in 889 by the powerful Arab chieftain Kurayb b. Khaldûn of Seville (ancestor of the historian) against Neo-Muslim opponents. Both Arabs and Berbers were divided into confederations which, in times of conflict, tended to pair off symmetrically across ethnic lines. Kurayb led a coalition of Yemeni Arabs and their Berber clients in western al-Andalus. These Berbers, led by Junayd b. Wahb al-Qarmûni (of Carmona), belonged to the Branes confederation. By a kind of natural pairing off, this coalition was then opposed by another comprised of Qaysî Arabs, traditional enemies of the Yemenis, Botr Berbers (enemies of the Branes), and Neo-Muslim clients.⁽³⁸⁾ If Botr-Branes lines were sharply drawn in the closing years of the ninth century, it is difficult to make a case for the virtual fusion of Arabs and Arabized Berbers in the tenth.

A tendency to form political coalitions along ethnic lines was characteristic of the Taifa period of the eleventh century after the polity had split into small, ethnically oriented

kingdoms. In 1047-1048, for example, a [182] powerful Berber coalition supported the proclamation of a Hammûdid pretender to the Caliphal throne. This coalition included the rulers of Carmona, Morón, Arcos, Huelva, and Badajoz, and was led by Bâdis b. Habûs, the Zîrîd emir of the Berber kingdom of Granada. All these made common cause and attacked the Arab 'Abbâdids of Seville. The coalition included both Sanhâja and Zanâta elements, in addition to "Arabized" Berbers of long standing such as the Aftasids of Badajoz, a Miknâsa group whose ancestors had participated in the conquest of the country. In spite of their Arabization, however, they nonetheless participated in this Berber coalition.⁽³⁹⁾ The Birzâlid of Carmona were a Zanâta group of recent immigration, closely allied with the Sanhâja Zîrîds of Granada.

Both the Birzâlids and the Zîrîds had migrated with their families in 997-998 to reinforce al-Mansûr's armies and had settled in the Granada-Jaén area. They were differentiated ecologically, however, the Zanâta occupying the countryside, the Sanhâja settling in the cities. In this situation, interestingly, the Branes-Botr split appears to have been smoothed over and a stable *modus vivendi* reached which permitted the formation of a common front to oppose the Arab bloc.⁽⁴⁰⁾

Comparing this period with that of the *fitna* of the ninth century, one notes that in the earlier period, before the massive conversion of Neo-Muslims, a sharp sense of ethnicity is manifest in the perpetuation of traditional moiety groups. In the Taifa period, perpetuation of moiety distinctions in the face of an overwhelming Neo-Muslim majority would have been politically disastrous for Berbers. The completion of the process of conversion, together with the northward migration of substantial numbers of Christians, produced a situation where the polity came increasingly to be split into two monolithic opposing blocs of "Andalusi Arabs" and Berbers, the latter a minority, but with great military power.

COMPETITIVE STEREOTYPES AND BERBERPHOBIA

The changing relationship between Berbers and Arabs can be appraised through texts which reflect the rising prestige of Berbers in the late tenth century, the result of their growing military and political power. At the same time, it is probable that substantial class differentiation had occurred within the Berber group, involving the emergence of a military elite which sought participation in political and economic power, thus setting the stage for extreme anti-Berber reactions by the lower strata of Andalusi [183] Arabs, fearful of a loss of status. Anti-Berber feelings were expressed in stereotypes typical of societies in which ethnic groups are competing for power.

A passage from ibn Hayyân sheds light on shifting attitudes towards Berbers in the time of al-Hakam II. Ibn Hayyân stated that 'Abd al-Rahmân III had hated Berbers and that al-Hakam II had begun his reign in the same way, going so far as to prohibit his pages, mercenary troops, and regulars from imitating Berber manners in dress or in saddlery. But then the Caliph, growing fond of Berber horsemen and recruiting them for his army, departed from the practice established by his predecessor; it was this change in attitude which, according to ibn Hayyân, landed al-Andalus in the morass of civil turmoil accompanying the dissolution of the Caliphate.⁽⁴¹⁾

The imitation of Berber dress, criticized by Berber-hating chroniclers, is a significant phenomenon which provides a rough index of the changing direction of cultural flow. As the Berbers became more powerful and prestigious, it became more acceptable and common for Arabs to imitate them. According to al-Maqqarî, the religious and intellectual elites in the highland towns of the south and west in the tenth century adopted the Berber headdress, the turban (*'imâma*), while in Córdoba and the east the oriental high bonnet (*kalansuwa*) was still the fashion. But, later on, Berber modes were adopted even by the Arab aristocracy of Córdoba. When the 'Amirid 'Abd al-Rahmân Sanchuelo came to power at the end of 1008, Berber prestige was enhanced owing to the influence over the ruler exerted by the Sanhâja chieftain Zawl ibn Zîrî. In January 1009 "Sanchuelo constrained the nobles to present themselves at his palace at [Madîna] al-Zâhira wearing not their traditional high colored bonnets, but Berber-style turbans," a bitter pill indeed for the haughty Cordoban aristocracy. The ultimate in this kind of adulatory emulation was reached when the Almoravid ruler Yûsuf ibn Tashufn first crossed over into Spain and was entertained at a banquet by al-Mu'tasim, the Tujîbî prince of Almería, who tried to please his guest by sporting a burnus. The Berber-hating poet-king of Seville, al-Mu'tamid satirized this degrading act of subservience in a poem. Recalling his pleasure with some "peerless maiden" the king noted that:

I also recalled—and my bliss was increased thereby—
The confusion and shame of the burnus-clad chap!

[184] "Confusion" is a revealing description, suggesting a period of extreme cultural flux, during which competing reference groups struggled for men's allegiance. Two centuries later, with Berber power on the wane, the turban was abandoned by all classes throughout eastern al-Andalus, an indication of a definitive reversal in the direction of cultural flow, and it was worn only rarely by the subjects of the Nasrid kingdom of Granada.⁽⁴²⁾

Arab stereotypes of Berbers were typical of situations in which the ruling caste is threatened by a powerful subordinate group. Like all ethnic stereotypes, these reflect -- albeit in an exaggerated and pejorative form -- real social and economic roles. As mountaineers and herders, Berbers were perceived as crude and ignorant. As soldiers and horsemen, they were seen as violent and arrogant. Al-Hamdânî's famous formula whereby violence was apportioned in the ratio of nine-tenths for the Berbers and one-tenth for the rest of mankind is a perfect expression of this aspect of the stereotype.⁽⁴³⁾

During the *fitna*, or period of anarchy at the end of the Caliphate, violent outbursts and ethnic massacres were common, as when the masses of Córdoba, afraid and angered by Berber hegemony in the capital, rose in 1010 and slaughtered Berber troops under Zawi's command, causing the relocation of the Zîrîds in Granada. This type of behavior characterized Arab-Berber relations for the rest of the century. In 1035, the Birzâlids intervened to prevent a massacre of Hammâdids by the Sevillian 'Abbâdids. Similarly, only the intervention of Samuel ibn Nagrella, the Jewish vizier, prevented the Zîrîd ruler from killing all the Arabs in Granada in 1058 in retaliation for the assassination of the Ifranid Berber ruler of Ronda.⁽⁴⁴⁾ We have already noted the alliance of Berbers and Jews in the eleventh century. This fact was not lost on Arab poets who joined the Jewish stigma with

Berber heterodoxy. "Your sword," wrote a court poet of al-Mu'tadid of Seville, "has raged against a people who have never believed except as Jews, although they are called Berbers."⁽⁴⁵⁾

"Berberization" was a fear very much in the minds of the Arab intelligentsia, who feared both for the bastardization of their cultural traditions and for the supposed threat to orthodoxy. Córdoba during the *fitna* was described as "a city such that [we pray] that God may forgive its inhabitants' lapse, for they became Berberized (*tabarbarû*), mingled with the Moroccans, and adopted the creed of the Egyptians," the latter a reference to the Shi'ite inclinations of the Hammâdids.⁽⁴⁶⁾

185] In view of the real threats of Berberization perceived by Andalusí Arabs of the tenth and eleventh centuries, claims for the speedy and thorough Arabization of Berbers during this period must be carefully qualified. Pierre Guichard, for example, asserts that old, established Berbers became quickly Arabized and during the eleventh century those who had not lost total consciousness of their origin wanted to, and considered the new arrivals barbarians.⁽⁴⁷⁾ It is extremely difficult to evaluate the extent of the acculturation of Berbers at any one time. Literate Berbers wrote in Arabic, and therefore all our knowledge of Berber culture from literary sources is filtered through an Arabic screen. Then, many Berbers falsified their genealogies, adopting Arab tribal names in order to dissemble their true ethnic identity. Successful Berbers who made good in Arab society as judges or government officials had no need to disguise their origins, but many noble families resorted to falsification. Thus, the Zîrîd prince Habûs b. Mâksan, faithful to a Sanhâja tradition, claimed Himyarite descent, and the Aftasids, of Miknâsa origin, did likewise and used the Arabic tribal name Tujîbî.⁽⁴⁸⁾

Nevertheless, acculturation did not necessarily lead to cultural fusion or to the lessening of social distance. 'Abd Allâh, the last Zîrîd king of Granada, whom Henri Pérès claims to have been totally Arabized, wrote that the Arabs had joined forces to fight the Berbers "owing to the hatred of their race."⁽⁴⁹⁾ The king may have been identical in culture to his antagonists, but he still perceived palpable social distance.

4. Assimilation of Neo-Muslims

To understand how and why the masses of indigenous Hispano-Romans came to form the mass of the population is the most difficult problem, but without attempting to do so we cannot hope to understand the dynamics of social organization in al-Andalus. The received view is that the Arab and Berber invaders, few in number, were absorbed into the indigenous social structure which continued unchanged, perpetuating considerable cultural distance from eastern Islam and making possible a continuity of interest with unconverted Christians. Thus Ramón Menéndez Pidal states that "Al-Andalus, so quickly made independent from the East, had Hispanified its Islam; the scant Asiatic and African racial elements had been almost completely absorbed within the indigenous elements, so that the great majority of Spanish Muslims were simply Ibero- [186]

Romans or Goths, reshaped (*reformados*) by Islamic culture, and who could easily enough come to an agreement with their brothers to the north."⁽⁵⁰⁾ This statement, which may be

regarded as typical of traditional historiography, contains two kinds of questionable assumptions. The first concerns the directionality of cultural change. Pierre Guichard has demonstrated quite conclusively that far from ingesting the Arabs and Berbers into structures of native social organization, the *muwallads* themselves were assimilated to a measurable degree into the agnatically based social structure of the conquerors. Indeed, he shows that as a general rule endogamous, agnatic groups tend to expand precisely by ingesting exogamous elements, particularly women, without altering the basic structure of the family and, hence, of tribal organization.⁽⁵¹⁾

The second assumption concerns the rate of assimilation or fusion, no matter how the problem of directionality might be conceived. In general, fusion is thought to have occurred rapidly. Most commentators follow Lévi-Provençal in asserting that Arabs and Neo-Muslims had effectively merged into an "Andalusi Arab" group by the end of the tenth century. The problem of rate is associated with another question, that of the modality of the movement of assimilation or fusion. *Fusion* assumes a blending of cultural elements and a concomitant elimination of social distance between the groups involved. An example would be the fusion of Anglo-Saxons and Normans in medieval England, whereby the conquering minority was largely absorbed culturally by the conquered majority at the same time as social distance was being reduced (admittedly at a slower rate than the movement of acculturation). The result was a daughter culture, substantially different (as measured by the language, for example) from the two parents, partaking of elements of both. We will argue here that there was no fusion of Arabs and *muwallads* in tenth-century al-Andalus in the sense of a merging of cultures. The processes which took place can be summarized as follows:

1. The explosive phase of conversion, spanning the middle two quarters of the tenth century, resulted in the conversion of approximately eighty percent of the original indigenous population to Islam.
2. What Lévi-Provençal and others have perceived as fusion is not what acculturation theorists understand by that term (i.e., a blending of elements of two cultures, producing a distinctive daughter culture). Rather, the Neo-Muslims, while retaining certain indigenous and regional customs, institutions, vocabulary, and so forth, along the lines of other [187] Islamic provinces, acculturated massively to Arab norms. If language is used as the indicator, Romance/Arabic bilingualism, common in the early centuries, wanes with the fortunes of Christianity.
3. What historians have observed and mistaken for fusion was the swamping of the Arab minority by the mass of converts in the course of the tenth century, creating a different kind of society, an Islamic one in which indigenous peoples predominated, replacing the imperial state ruled by an Arab minority.
4. In spite of the Arabization of the indigenous masses, social distance was by no means eradicated, and the assimilation of the Neo-Muslims and their full acceptance by Arabs lagged substantially behind the movement of acculturation.

The mechanisms of the conversion process, we have already noted, were largely self-generating, depending upon the increasing frequency of contacts between Muslims and non-Muslims, owing to the incremental growth of the former group. The great mass of Neo-Muslims were initially rural people, although during the course of the country's rise to economic dominance in the western Mediterranean great numbers were attracted to the towns, where they swelled the ranks of the urban proletarian and artisan classes. To a measurable extent, then, there must have been economic and prestige factors which enhanced the attractiveness of conversion. Pastor contends that the Muslim *sharîk* (sharecropper) was better off than his equivalent in Visigothic times and that this obvious socio-economic differential was an impetus to conversion.⁽⁵²⁾

This would accord well with Bulliet's generalization that lower-class people tended to convert first, in order to benefit from tax and other economic advantages which would accrue to them in a Muslim polity. On the other hand, the advantages of a change in juridical status would not immediately have been apparent to a Christian peasant who came into contact with Muslims only infrequently. To a city-dweller, avoidance of the *jizya* and the avenues of upward mobility available to the convert must have appeared obvious.

From a variety of indicators, one can piece together a picture of the steady conversion of the indigenous masses. Through the clientage system, Neo-Muslims were to some degree integrated into the Arabic tribal system.⁽⁵³⁾ The taking of Arab tribal names, a normal expression of clientage, was part of the process of Arabization and, moreover, the fact that Mozarab families arriving in León in the ninth century bore "Beni" names [188] indicates that at this early date even Andalusí *Christians* had adopted agnatic forms of kinship.⁽⁵⁴⁾ By the twelfth century, there is evidence of pervasive participation by *muwallads* in Arab tribal structure, attested to, for example, by cross-cousin marriages in the family of the *muwallad* lord ibn Mardanîsh (Martínez).⁽⁵⁵⁾ Even if agnatic kinship may not have spread uniformly among Neo-Muslims, certainly other, related aspects of Arabic social structure did. The social role of women, whose supposed "occidentality" is the subject of a particularly incisive critique by Guichard, is a case in point. Basing their conclusions on the numerical preponderance of indigenous peoples, Julián Ribera and other Arabists supposed that the social structure of the numerically inferior Arabs was weakened and "Hispanized" by the massive intermarriage of Arab men and Hispanic women. Guichard shows not only that those women who married into Arab clans became part of the tribal structure and played social roles about as constricted as those of their eastern counterparts, but also that slave girls and concubines, through their rigorous training in Arab culture and mores, far from being agents of Hispanization were, in fact, agents of Arabization.⁽⁵⁶⁾

The Arab rulers (again, in Guichard's view) used the agnatic kinship structure to good advantage in order to weaken the native aristocracy. By retaining most of the high governmental posts for themselves, the Arabs forced those Christians who wished to retain a measure of authority over their coreligionaries into the ecclesiastical hierarchy -- a biological dead end. By absorbing the rest of the native elite, particularly its women, into the clan structure, the indigenous upper class was quickly assimilated.⁽⁵⁷⁾

The pattern of Neo-Muslim dissidence in the ninth and tenth centuries is similar to that of the Berbers, and provides a de facto measure of ethnic differentiation. There were three

prominent foci of rebellion during the *fitna* which began in the reign of the Emir Muhammad: Mérida, where 'Abd al-Rahmân b. Marwân ibn al-Jilliqî ("son of the Galician"), whose father had been governor of Mérida under 'Abd al-Rahmân II, rose repeatedly (once in concert with Kurayb b. Khaldûn); the Upper March, where the Banû Qasî ruled in practical independence from Córdoba; and the mountains of Málaga, where the most important revolt erupted in 879 under the leadership of the charismatic *muwallad* leader, 'Umar ibn Hafsûn. In 899 he converted to Christianity, attracting Mozarab support but losing, in exchange, the following of most of his Neo-Muslim supporters, who had no intention of turning Christian. (Apparently his reasons for [189] conversion were opportunistic. He hoped to gain military support from Alfonso III of León.)

A number of aspects of ibn Hafsûn's revolt bear commentary. First, given the equalitarian promise of Islam, the *muwallads*, like the Berber *khârijites*, were fighting, in part, for their due share of power, as well as for the social and economic rewards guaranteed them by law. It is an error to view such revolts as "nationalist uprisings" or attempts at "Hispanic" independence; rather, they took place purely within an Islamic framework, as part of the growing pains of a nascent Islamic state. Second, ibn Hafsûn's cause was a social struggle fought by tenant farmers against Arab landlords. Third, the common cause made with Mozarabs was based on class interest -- the Mozarabs were also tenant farmers -- and no doubt the two groups shared elements of culture. But the chance for a lasting coalition of Neo-Muslims and Mozarabs was precluded by the fact that each group was embedded in Andalusí society in a different way, and the stakes in rebellion were quite different for each. Simply stated, Neo-Muslims had real access to power and could pact with other dissident Muslim groups, both Arab and Berber, toward the end of achieving it. Mozarabs could aspire to win relief from economic burdens deemed too heavy, but access to power was foreclosed to them. The cultural similarity and common origin of the two groups does not mean that their social aspirations or latitude for mobility were comparable.⁽⁵⁸⁾

Muwallads were subjected to discrimination and racial stereotyping and reacted in characteristically defensive ways. In the early centuries Arabs called them "sons of slaves" or "sons of white women" and the social distance implied by such epithets was still palpable in the twelfth century. This is apparent in several observations of a defensive nature made by ibn Rushd, whom I assume to have been a *muwallad*. In a very interesting and revealing passage from his commentary on the *Meteorologica* of Aristotle, ibn Rushd invokes the ancient theory of climatic determinism to explain somatic differentiation between Andalusis and Arabian Arabs. The hair of Andalusis was straighter and less curly and their skin lighter than was the case with natives of Arabia. This is explained by the fact that, owing to the temperateness of the Iberian climate, the progeny of Arabs and Berbers residing there grew to resemble the natives physically (and, for similar reasons, the invaders began to study the sciences: since al-Andalus was similar in climate to Greece, the intellectual capacity of [190] the residents of both places was equivalent). Andalusis, therefore, who claimed Arab descent but who did not resemble Arabs somatically, had to have a rationale for that differentiation. Elsewhere, ibn Rushd stressed that nobility could be attained through achievement, as well as through birth, a position which is standard among groups seeking social recognition and equality.⁽⁵⁹⁾

Difficulties of adjustment were also mirrored in expressions of ethnic solidarity among Neo-Muslims (and, on occasion, between Neo-Muslims and Christians). A *muwallad* judge from Huesca of the early tenth century, Muhammad ibn Sulaymân al-Ma'afirî (his grandfather had been a Ma'afirî client and so his tribal affiliation was fictive) was described as a "champion of *muwallad* ethnic solidarity" (*shadid al-'asabiyya li'l-muwalladin*).⁽⁶⁰⁾ The notion of '*asabiyya*' (frequently translated "group feeling") is one of agnatic kinship and in this case is indicative of at least the style of agnaticism, if not the substance.

The *shu'ûbiyya* movement of the eleventh century was an effort by *muwallad* intellectuals to counter ethnic slurs which they continued to receive. In refutations of ibn García's *Risâla*, Neo-Muslims were chided for their forging of genealogies to conceal their origin; mocked for their language (as "stammerers who have a speech impediment") and their blond coloration; decried as cowards in battle; derided for their disloyalty towards the Arabs and the lack of respect shown towards those who raised "your condition after it had been low"; and attacked as having Christian leanings, obvious since Christians were their "tribesmen." Ibn García's allegations on behalf of his ethnic group covered the same categories, only with positive valuation.⁽⁶¹⁾

To summarize the trend of relations among the three Muslim ethnic groups: through the ninth century armed dissidence was part of the process of adjustment through which competing groups tested each other's power, and by the manipulation and control of such conflict the state could react in such a way as to stabilize the polity. The late tenth century witnessed a drastic change in the ethnic balance of power, due, first, to the massive conversion of the indigenous population and, second, to an increment in the number of Berbers, both of which made untenable the survival of a unitary state dominated by Arabs. In the eleventh and twelfth centuries, distinctions between Arab and Neo-Muslim became increasingly blurred, although not forgotten, so that by the time of the Almoravid and [191] Almohad invasions, a more homogeneous culture, with regional idiosyncrasies parallel to those of contemporary Islamic states, had emerged.

5. Ethnicity in Christian Spain

The emergence of five distinct cultural zones in Christian Spain (Galicia-Portugal, León, Castile, Aragón, and Catalonia) did not in the high middle ages generate enough cultural distinctiveness to cause conflicts of an ethnic, as distinguished from a political, nature. During this period, people from all kingdoms spoke dialects which were mutually intelligible, or nearly so, and peoples from all regions seem to have intersettled in newly opened territory without conflict. Three Christian groups characterized by substantial ethnic differentiation -- primarily linguistic -- did evoke special responses, but were handled more in accord with the special statutes governing religious minorities as a more or less transitional measure to enhance peaceful intergroup relations during the period of acculturation. None of the three groups -- Basques, Franks, and the Mozarabs of Toledo -- suffered the long-term stigmatization that the religious minorities did.

There were numerous Basque settlements in the north of Castile, particularly in the region of Oca and Briviesca. We must assume substantial bilingualism throughout the period, and even the persistence of nuclei of monolingual Basque-speakers as late as the thirteenth

century when (ca. 1235) Ferdinand III granted them permission to plead in Basque before the royal *merino* (judge).⁽⁶²⁾

As they came down from the mountains, the Basques appear to have, on the whole, learned Romance very quickly and, since their participation in the formation of Old Castile and the early efforts of conquest and settlement was so much in evidence, seem not to have generated any hostility on account of linguistic differentiation.

The term *franco* was applied generically to anyone arriving from the north of the Pyrenees. The Chronicle of Sahagún specifies Gascons, Bretons, Germans, Englishmen, Burgundians, Normans, as well as folk from Toulouse, Provence, and Lombardy. But in fact most "Franks" were from the southern areas of France adjacent to Spain. These emigrants were primarily merchants and artisans who came to settle new towns and quarters springing up along the road to Santiago beginning in the late eleventh century. In these early settlements and extending well into the twelfth [192] century, the newcomers were spatially segregated and communally autonomous, preserving their traditional juridical norms. Thus in Estella, a burgum created solely for Franks by Sancho Ramírez of Aragón, the Fuero forbade any Navarrese to live there (1090). In the Fueros of San Cernín de Pamplona and Sanguesa (1122), it was stipulated that no one was to dwell among the Franks, "neither Navarrese, nor cleric, nor soldier, nor knight." In Belorado (1116) and in Sahagún (1152), there was one judge for Franks and another for Castilians. The rate of Frankish acculturation was a function of the distance of their settlements from the Pyrenean frontier and from the pilgrimage route. Thus, in Estella, the town ordinances were written in Provençal until the fourteenth century, while those who settled in the Duero Valley assimilated much more quickly.

The special privileges (not only juridical but economic -- the right to hold markets, monopolies over sale of provisions to pilgrims, tax exemptions, and so forth) accorded to the Franks induced ample resentment on the part of the indigenous Christians, provoking armed conflict as late as the thirteenth century in Pamplona. J. M. Lacarra has advanced the interesting hypothesis that embellishments of the legend of Charlemagne as liberator of much of northern Spain and pilgrim to Compostela, and tales of Frankish heroes come to serve St. James to free Spain from the Muslims, were promulgated by French jongleurs living in Frank communities along the pilgrimage road, in reaction to the hostility and envy that their presence generated among the natives.⁽⁶³⁾

The most highly differentiated Christian minority was the substantial Mozarab population of the city and countryside of Toledo. By the time of the conquest of the town (1085) these Christians had become Arabic-speaking and they continued to speak and write personal documents in that language for two centuries or more.⁽⁶⁴⁾ In addition, they were highly acculturated to Andalusí customs and techniques (especially agricultural) which they continued to practice. Adding to their cultural particularity was the persistence of the Visigothic liturgy which the rest of the Castilians had abandoned in favor of the Roman rite. These were people who felt at home in an Islamic milieu, having preferred to remain in Toledo in early times when other Mozarabs had emigrated to Castile and León. From the very first moments of Castilian rule conflict erupted between the Mozarabs and the newcomers over the numerous estates abandoned by the Muslims. In the twelfth and

thirteenth centuries there unrolled a [193] steady process of the impoverishment of Mozarab cultivators, as more and more land came under control of magnates and ecclesiastic corporations. The latter, under the influence of the intolerant Cluniac bishop Bernard and Rodrigo Ximénez de Rada, the primate archbishop, who was himself the principal buyer of Mozarab property in the early thirteenth century, fomented a segregationist policy under the cloak of religious nationalism.⁽⁶⁵⁾

Ximénez de Rada's bias is symbolized in his coining of the semi-erudite etymology of the word Mozarab from *mixti arabi*,⁽⁶⁶⁾ connoting the contamination of this group by overexposure to infidel customs, if not by migration.

On balance, then, the attitudes of Christian society toward ethnic minorities varied according to the degree of cultural distance, with religion carrying the heaviest charge, followed in importance by linguistic differentiation. In the case of the latter, social distinctions reinforced cultural boundaries and intensified ethnically based conflict. Thus Basques who settled among Romance speakers acculturated rapidly because they were not socially differentiated. For privileged foreign burghers and underprivileged Mozarabs, cultural boundaries remained high until social leveling could take effect, a process much protracted due to the mutually reinforcing influences of cultural and social factors.

Notes for Chapter 5

1. H. J. Chaytor, *From Script to Print* (New York: October House, 1967), p. 29.
2. On *enaciados*, see Castro, *The Spaniards*, p. 228.
3. Goitein, *Mediterranean Society*, II: 289.
4. *Ibid.*, II: 311.
5. Eliyahu Ashtor, *The Jews of Moslem Spain*, vol. I (Philadelphia: Jewish Publication Society, 1973), p. 139; Goitein, *Mediterranean Society*, I: 251.
6. See Edward P. Colbert, *The Martyrs of Córdoba (850-859): A Study of the Sources* (Washington, D.C.: Catholic University of America Press, 1962), pp. 31-33.
7. Yitzhak Baer, *A History of the Jews in Christian Spain*, 2 vols. (Philadelphia: Jewish Publication Society of America, 1961-66), I: 51; Rodríguez Fernández, *La judería de la ciudad de León*, p. 76.

8. Norma Mobarec Asfura, "Condición jurídica de los moros en la alta edad media," *Revista Chilena de Historia del Derecho*, 2 (1961), 43. Burns, *Islam under the Crusaders*, p. 264 n. 39, notes a tendency in twelfth-century Castile to favor Christians in mixed cases.

9. Burns, *Islam under the Crusaders*, pp. 237-238.

10. Fuero de Calatayud: Muñoz, *Colección de fueros*, p. 462: "Et Christiano juret ad judeo, et ad mauro super cruce. Et judeo juret ad christiano in carta sua atora tenendo. Et mauro qui voluerit jurare ad christiano et dicat: Alamin catzamo et talat, teleta." In León, Jews had to take the oath by actually going to the synagogue and placing their hands on the Torah (Rodríguez Fernández, *La judería de la ciudad de León*, p. 75 n. 19); *Fuero de Jaca*, Molho, ed., pp. 56, 62.

11. Burns, *Islam under the Crusaders*, pp. 227-228, 265.

12. Goitein, *Mediterranean Society*, II: 277; *Siete Partidas*, 7.24.9; 7.25.10.

13. *Siete Partidas*, 7.24.7; 7.25.4.

14. Goitein, *Mediterranean Society*, I: 136-137; *Siete Partidas*, 7.24.10; 7.24.2; 7.25.1; *Fuero de Jaca*, p. 239 (no. 128); the *Fuero Real* of 1255 forbade Jews from reading anything contrary to their own religion, a good example of the dominant caste taking pains to strengthen the group boundaries of a subordinate caste (cited in Castro, *The Spaniards*, p. 546).

15. Goitein, *Mediterranean Society*, I: 142.

16. Ashtor, *Jews of Moslem Spain*, I: 58, 88, 155-227.

17. Andrew Handler, *The Zirids of Granada* (Coral Gables: University of Miami Press, 1974), pp. 72-77, 152-157. Cf. Lawrence Rosen's comments on the typical economic interdependence of Jews and Berbers in modern Morocco, "The Social and Conceptual Framework of Arab-Berber Relations in Central Morocco," in Gellner and Micaud, eds., *Arabs and Berbers*, p. 161.

18. Baer, *Jews in Christian Spain*, I: 50-51, 54, 56; Rodríguez Fernández, *La judería de la ciudad de León*, p. 66.

19. Goitein, *Mediterranean Society*, I: 199; Rodríguez Fernández, *La judería de la ciudad de León*, pp. 74, 82-84.

20. Ubieto, *Ciclos económicos*, pp. 7 (general hypothesis), 35, 42, 46, 78, 85, etc.

21. Baer, *Jews in Christian Spain*, I: 51; Mobarec, "Condición jurídica de los moros," p. 46.

22. Burns, *Islam under the Crusaders*, p. 187.

23. Goitein, *Jews and Arabs*, pp. 125, 131; Ashtor, *Jews of Moslem Spain*, pp. 365, 388.

24. Goitein, *Letters of Medieval Jewish Traders*, pp. 9-10.
25. *Ibid.*, p. 55.
26. Baer, *Jews in Christian Spain*, I: 63-64.
27. *Ibid.*, I: 54.
28. Colbert, *Martyrs of Córdoba*, p. 301.
29. Vicente Cantarino, "The Ninth Century Cordoban Mozarabs: Did they Really Know Arabic?" typescript. Cited by permission.
30. Rodríguez Fernández, *Monasterio de Ardón*, *passim*. Gómez-Moreno, *Iglesiasmozárabes*, p. 15, also remarks that Mozarab women in León only rarely had Arabic names.
31. The pattern is common. See, e.g., Montagne, *The Berbers*, p. 7, on Berber bilingualism. Also, among the Sephardic Jews of northern Morocco of recent times it was typical to find bilingual or trilingual men married to women who spoke only Spanish.
32. Burns, *Islam under the Crusaders*, p. 389. Cf. Juan Torres Fontes, *Los Mudéjares murcianos en el siglo XIII* (Murcia: Academia Alfonso X el Sabio, 1964), pp. 10-11; in Murcia, the tribal *majlis* was also converted into a *consejo de ancianos*.
33. Dozy, *Recherches*, I: 37.
34. García de Cortázar, *Epoca medieval*, p. 111; also, p. 124, where he characterizes the Umayyad, Almoravid, and Almohad states all as fictitious entities, or superstructure. The "house of cards" characterization is that of Lévi-Provençal.
35. Ibn Khaldûn, *The Muqaddimah*, I: 332.
36. Isidro de las Cagigas, *Andalucía musulmana: Aportaciones a la delimitación de la frontera del Andalus* (Madrid: Instituto de Estudios Africanos, 1950), p. 55; Lévi-Provençal, *España musulmana. Instituciones y vida social*, p. 96.
37. See Lévi-Provençal, *España musulmana hasta la caída del califato de Córdoba*, trans. E. García Gómez, 2nd ed. (Madrid: Espasa-Calpe, 1957), pp. 74-75, 104, 132, 139-141.
38. *Ibid.*, pp. 230-233.
39. Hady Roger Idris, "Les Birzâvides de Carmona," *Al-Andalus*, 30 (1965), 56-67; *idem*, "Les Aftasides de Badajoz," *Al-Andalus*, 30 (1965), 290.
40. See Idris, "Les Zîrîdes d'Espagne," *Al-Andalus*, 29 (1964), 52, 128, 130, 135; *idem*, "Les Aftasides," p. 290, and "Les Birzâvides," p. 59.

41. Emilio García Gómez, "Al-Hakam II y los beréberes según un texto inédito de ibn Hayyân," *Al-Andalus*, 13 (1948), 219-221.

42. E. Lévi-Provençal, *L'Espagne musulmane au Xème siècle* (Paris: Larose, 1932), p. 27; Idris, "Les Zîrîdes," p. 47; A. R. Nykl, *Hispano-Arabic Poetry and its Relations with the Old Provençal Troubadours* (Baltimore: J. H. Furst, 1946), p. 181; Rachel Arié, "Le costume des musulmans de Castille au XIIIe siècle d'après les miniatures du *Libro del ajedrez*," *Mélanges de la Casa de Velazquez*, 2 (1966), 64. Note, however, that Guichard (*Al-Andalus*, p. 305) rejects this line of argument, asserting that in the epoch of the conquest the turban was worn by Arabs, especially shaykhs.

43. Bosch Vilá, "Elemento humano norteafricano," p. 33.

44. Idris, "Les Aftasides," p. 54, and "Les Zîrîdes," p. 76

45. Idris, "Les Zîrîdes," p. 70 n. 20.

46. James T. Monroe, *Hispano-Arabic Poetry: A Student Anthology* (Berkeley: University of California Press, 1974), p. 160. A similar sentiment was expressed by the Umayyad prince al-Musta'in, who complained of the enslavement and Berberization of his dynasty (Nykl, *Hispano-Arabic Poetry*, pp. 72-73).

47. Guichard, "Peuplement de la région de Valencia," p. 123.

48. Bosch Vilá, "Elemento humano norteafricano," pp. 29-30; Idris, "Les Zîrîdes," p. 58, and "Les Aftasides," p. 278.

49. Pérès, *Poesie andalouse*, p. 259; Idris, "Les Zîrîdes," p. 43.

50. Menéndez Pidal, *España del Cid*, I: 77 (my translation). See comments by Glick and Pi-Sunyer, "Acculturation as an Explanatory Concept," pp. 144-145; and Guichard, *Al-Andalus*, p. 18.

51. Guichard, "Les Arabes ont bien envahi l'Espagne," p. 1,509; *idem*, *Al-Andalus*, pp.172, 192, 194.

52. Pastor, *Del Islam al Cristianismo*, p. 75.

53. Armand Abel's contention that clientage was not much in evidence in al-Andalus is unfounded; "Spain: Internal Division," in G. E. von Grunebaum, ed., *Unity and Variety in Muslim Civilization* (Chicago: University of Chicago Press, 1955), p. 214. See comment by Guichard, *Al-Andalus*, p. 330 n. 172.

54. Guichard, *Al-Andalus*, pp. 490, 442. The question of the kinship structure of the Hispano-Romans is unresolved. As Pierre van den Berghe has pointed out to me, the Hispano-Romans may well have been just beginning, at the time of the conquest, to move from a patrilineal to a bilateral family structure. Exposure to Arabs or conversion to Islam

may well have arrested this movement or enhanced a shift back towards patrilineality (personal communication).

55. Guichard, *Al-Andalus*, p. 220.

56. *Ibid.*, pp. 9, 148-149, 163, 172, 175, 178, etc.

57. *Ibid.*, p. 197.

58. Ashtor, *Jews of Moslem Spain*, I: 108. On the dual structure of ethnic relations in Islamic Spain, see my article "The Ethnic Systems of Premodern Spain," *Comparative Studies in Sociology*, 1 (1978), 157-171.

59. On pejorative terms applied by Arabs to *muwallads* (itself a derogatory term), see Guichard, *Al-Andalus*, p. 213, and Abel, "Spain: Internal Division," pp. 214-215.

60. Lévi-Provençal, *España musulmana: Instituciones y vida social*, p. 102 n. 23. See also Guichard, *Al-Andalus*, p. 495, for other instances of *muwallad 'asabiyya*.

61. James T. Monroe, *The Shu'ūbiyya in al-Andalus: The Risāla of Ibn García and Five Refutations* (Berkeley: University of California Press, 1970), pp. 35, 36, 50, 51, 69, 76, 94.

62. Justo Pérez de Urbel, "Reconquista y repoblación de Castilla y León durante los siglos IX y X," in *La reconquista española y la repoblación del país*, pp. 150-151.

63. J. M. Lacarra, "La repoblación del camino de Santiago," in *ibid.*, pp. 225-228; *idem*, "La repoblación de las ciudades en el camino de Santiago," pp. 469-488.

64. See, e.g., the documents published by Angel González Palencia, *Los mozárabes de Toledo en los siglos XII y XIII*, 4 vols. (Madrid: 1926-1930).

65. Pastor, *Conflictos sociales*, pp. 199-268.

66. Colbert, *Martyrs of Córdoba*, p. 21. The Chancellor Ayala later repeated the same theme: "mozárabes quiere decir christianos mezclados con alárabes." Cited by Ramón Menéndez Pidal, *Orígenes del español*, 2nd ed. (Madrid: Hernando, 1929), p. 434 n. 1.

STRUCTURE AND STABILITY

1. Stability and Continuity

[194] The standard periodizations of medieval history are based on political changes (especially cataclysmic ones) which tend to stress discontinuity between periods: the emergence of the Caliphate, and its fall; the emergence of the Party Kingdoms, and their decay and conquest in al-Andalus; dynastic shifts and the transit of hegemony among various kingdoms; and the great transitional dates of the wars of conquest (1085, the fall of Toledo; 1212, Las Navas de Tolosa) in Christian Spain. Such are the biases of traditional historiography, which saw the structure of future political forms presaged in earlier events. But comparative analysis tends to blur the profile projected by political peaks and valleys, and to stress phenomena which bespeak continuity between periods, and among different societies or cultures to identify and compare their basic components. On a diachronic plane, societies are seen to undergo gains and losses in structure-processes of crystallization (or decrystallization) of social and cultural forms which play themselves out over long periods of time, frequently spanning the benchmarks of political change.

In general, the high middle ages in both al-Andalus and in Christian Spain were a period of crystallization, both social (the subject of this chapter) and cultural (Chapter 9), a period of continuity in the elaboration of social structure from rudimentary and primitive forms in the eighth century to the relatively sharply crystallized societies of the twelfth and thirteenth centuries. By "structure," however, we mean (following Thomas Smith) something more general than the specific building blocks and linkages of social networks. It refers, rather, to the "relative invariance or fixity of relationships among the elements of a system," whatever those elements may be. Stability, in this sense, implies the relative permanence of arrangements regulating the distribution of resources within the society: the greater the permanence, the more crystallized is the social or cultural network. The opposite process -- decrystallization -- refers to structural loss, to the loosening of social arrangements, or to the redistribution of resources.⁽¹⁾ We can describe, in the period under consideration, processes [195] both of crystallization and decrystallization on either side of the cultural frontier. From an analytical standpoint, however, it happens that processes of crystallization and decrystallization can occur simultaneously within the same society. What a historian sees depends (as suggested in the Introduction) on what processes are viewed as normative.⁽²⁾ Thus, Gibbon viewed the decline of the Roman Empire as a decrystallizing process, whereas modern historians have detected impulses of recrystallization in the same period.

With near universality among historians, al-Andalus has been regarded as an unstable political entity, indeed as a society one of whose characteristic features was an inability to stabilize itself. Castro's judgment may be taken as representative: "Islam was incapable of creating *stable political* systems based on something other than a common religion and

dictatorial rule; the totally religious character of Muslim life hindered the creation of secular forms of communal existence." Equally categorical is García de Cortázar: the Muslims never established "a *stable* political consensus"; the fall of the Caliphate is represented as the breaking of the "fictitious equilibria" upon which the state was built. Sánchez-Albornoz accepts the divisive nature of Andalusí politics as given, attributing this characteristic to "Spanish pride."⁽³⁾ Examples could be extended indefinitely, drawing upon many recent medievalists.

Three kinds of problems arise from this characterization of the Andalusí state. First, there is a perceptual, valuative problem. Those who so characterize al-Andalus do so on the basis of an implicit model of sound political structure, against which this particular society is judged negatively, as falling short of some norm. Second is the nature of stability itself. What constitutes a stable political system? Indeed, is political stability, however defined, commensurate with or a prerequisite of social cohesion? This suggests a third order of analytical problem, that dealing with the social or social-psychological corollaries of political stability. Political instability seems to suggest that the society is flawed or imperfect. The search for the key to this imputed flaw leads to even more categorical generalizations: that the society is unable to generate sound political forms, owing to some structural, psychological, or even genetic defect.

The first problem is placed into clear focus by Guichard: there has been an excessive tendency on the part of historians to treat al-Andalus as a coherent political entity, something like a national state on the European model, when in fact it was a segmentary, tribal society, at least in its [196] early centuries.⁽⁴⁾ In such a social system, instability at the dynastic level is normal and expected because tribal political life takes the form of a constant testing of forces. This process has the result of forming continually shifting equilibria which, if "unstable" judged by a criterion that places positive value on the long-term continuity of a central government or ruling institution, are not, for that, fictitious. Their reality is the reality of segmentary organization.

Stability of social organization and continuity in its institutions were very much a part of Andalusí society, but their mainsprings did not lie in the ruling institution. In the first place, tribal organization in itself must be viewed as a stabilizing force. A number of historians have stressed the positive functions of tribal fragmentation. Guichard, in discussing the constant state of rivalry among groups, notes that the principle of opposition was essential to the equilibrium of Arab society. Such opposition was perpetually readjusted, creating equilibria between hierarchized agnatic groups.⁽⁵⁾ Burns, in commenting on the survival of Islamic society in Valencia after the Christian conquest, notes that "The paradox is that a country so rent by factionalism as to fall before the crusaders, piece by piece, was by reason of that very fragmentation tough enough to survive at its lower levels."⁽⁶⁾

In the eighth and ninth centuries, political success was tribal success, measured in tribal terms.⁽⁷⁾ Guichard documents this when he shows that all the political activities of the Magila Berbers, for example, had a tribal basis, from which all power was ultimately derived. The same was true of other groups, from the political turnovers of the early governors (the actions of the powerful Fihri family are a case in point) to the Umayyads

themselves. 'Abd al-Rahmân I built a civil and military administration staffed almost wholly by his own kinsmen and clients. Ibn Khaldûn notes that it was his dynasty's hallmark that it bestowed office, particularly judgeship, upon those who shared in the dynasty's *'asabiyya* or "group feeling." During the *fitna* of the late ninth century, 'Abd Allâh was reduced to the support of the same group which provided the regenerative nucleus for the inception of the Caliphate. The slave regimes of the early Party Kingdoms proved too unstable to survive, lacking a tribal base; these were soon eliminated by the Arab and Berber elites who founded states based on family and clientage relationships.⁽⁸⁾

The nature of Islamic law, which regulated daily as well as religious affairs, introduced a standardization or uniformity of governance and of [197] social behavior which meant that political boundaries could change kaleidoscopically without interrupting the relative stability of public order on lower levels, particularly that of the town. (In Christian Spain, a role parallel to that of Islamic law was played, on one level, by urban law, which was diffused by the process of the territorialization of the great *Fueros*, and, on a higher level, by the diffusion of Roman law.) The political balance in all Islamic states of the middle ages was precarious. Princes rose and fell and tribal geography shifted constantly, but the basic structure of the society was untouched. As Goitein sardonically observed, the breakdown of public order was regarded as something akin to a natural phenomenon.⁽⁹⁾

The law was dominated by middle-class values and concerns and interpreted by that bourgeois element par excellence, the *faqîhs*. We have previously noted the ambivalence of the *fuqahâ'* with regard to the ruling elites: on the one hand, the desire not to be compromised by power; on the other, the necessity of playing a public role in the interests of enforcing the dictates of religious law. In sociological terms, the legalism of medieval Islam was the principal means of social integration, at least in urban society. The characteristic social division of power between a literate urban elite and an illiterate, rural, tribal mass explains the social function of the *fuqahâ'*. The jurisprudential class, as interpreters of Islamic law, served to mediate between the ruling institutions and the tribal masses to interpret the law for the latter and, through the law, to provide a religious sanction or check upon the excesses of rulers.⁽¹⁰⁾

The *fuqahâ'* always appeared to support the status quo, providing the ruling elite with the legitimation of Islamic law, as a force to countervail political instability. The state, moreover, used the *fuqahâ'* and religious institutions such as the judgeship (*qadâ'*) to ensure order and to replace, in effect, tribal relationships in an urbanizing society. Thus one gains the impression that qadis, on a day-to-day basis, were actually governing the towns, whatever the "civil" administrative structure may have been. From this web of authority in which the *fuqahâ'* were thoroughly enmeshed comes the prevalent historical judgment (as in Lévi-Provençal) of Andalusî Islam, embodied in the jurisprudential class, as having been rigid and conservative, indeed deliberately so, a judgment which, as Urvoy indicates, misconstrues the nature of Islamic law. In theory, Islamic law -- whether Maliki or not -- was rigid, but in practice it was fluid, malleable, and not inflexibly systematized.⁽¹¹⁾ Al-Khushanî repeatedly shows judges [198] interpreting the law pragmatically, using precedents and analogies -- in sum, a customary legal system, with informal elements superimposed upon the canonical sources.

In spite of the well-known disinclination of many prominent *fuqahâ'* to fill public positions -- to decline the judgeship was a sign of moral probity -- members of this class were in fact deployed with amazing fluidity to staff the juridico-legal bureaucracy (as opposed to the royal household). Mones points out that the Umayyads controlled the corps of officials drawn from the *faqîh* class by continual juggling of administrative posts. Judgeships turned over rapidly, and *fuqahâ'* --frequently the same individuals -- held the posts of *muhtasib* and *sâhib al-shurta*, often in different towns. Provincial qadis were not allowed to become too powerful, and many biographies contain the phrase: "He was called to Córdoba" -- not necessarily a promotion, in Mones' view.⁽¹²⁾

Serial judgeships, whereby a *faqîh* would move from one town to another after a few years of service to hold the judgeship there, became characteristic of Andalusí administration, from early Umayyad times through the Almohad period. Al-Khushanî mentions several ninth-century *faqîhs* who held provincial judgeships before coming to Córdoba, and later the pattern became more pronounced. Of the forty-three qadis mentioned in ibn al-Zubair's biographical dictionary (twelfth and thirteenth century, but which reflects the practice of the Taifa period as well) fourteen (thirty-two percent) held the judgeship in two or more towns, indicating a measure of organizational continuity over the entire country.⁽¹³⁾

That this period typified the Taifa, as well as the Umayyad, period demonstrates that political control by a centralized state was not the only function of serial judgeships. Taifa-period judges crossed political boundaries as if they did not exist. It is this feature of the administration of Islamic law that gave stability to the social system in spite of political instability and shifting political boundaries. The contrast between the permanence of the juridical system and the impermanence of the political system demonstrates the coexistence of a highly crystallized social network involving the urban middle class on the one hand, and, on the other, a military and ruling elite which betrayed many of the signs of lack of structure inherent in the steady breakdown of tribal organization.

In later times one notes that, because of the peculiar historical situation caused by the increase of Christian military pressure, the *fuqahâ'* increased their social weight just when the system of Islamic law was failing to [199] fulfill its prime role as the glue which held the polity together. Ibn Khaldûn records that the Almoravids honored the *fuqahâ'*, who "Were appointed to the council, everybody according to his influence among his people in his respective village."⁽¹⁴⁾

The height of their social and political prestige was reached, however, just as Christian pressure became intolerable. A measure of structural loss was the emergence of Sufism, which, as a religious movement, was diametrically opposed in tonality and spirit, to the rule of *fiqh* and its interpreters (and which also had different social roots).⁽¹⁵⁾ The failure of *fiqh* in the waning days of Andalusí society was, of course, the ultimate instability, a disaggregation of authority at the level which had, in the past, provided the greatest source of continuity. But this collapse was provoked from without, and was beyond the society's ability to control.

A measure of social stability is the ability of the prevailing social model to predict accurately the real division of resources. In al-Andalus, tribal affinity remained an accurate predictor of socio-economic status until the end of Islamic settlement. In the sixteenth century, when Arab names were outlawed and Muslims were forced to take Christian names, Moriscos complained that they were hampered in the pursuit of normal social and economic relations (marriage, commerce), lacking the security of knowing the lineage of the other individuals. One of the objectives of the second Alpujarras revolt was a reestablishment of tribal deference patterns through the reassumption of tribal names.⁽¹⁶⁾

But clearly there were other indicators of deference besides tribal ones. The related processes of conversion, urbanization, and detribalization created a dual structure whereby, for example, the urban oligarchy that comprised the *faqîh* class after the fall of the Caliphate controlled a substantial amount of resources, both power and wealth, without any meaningful participation in a tribal structure. When Mu'tamid of Seville noted in 1086 that the Andalusis formed peoples and not tribes, he was recognizing that the basis of deference had shifted and that the traditional social model, the tribal one, was no longer an accurate predictor of the real distribution of preferment. Ibn Khaldûn echoed this perception later, remarking that "group feeling" had been lost in al-Andalus, which was no longer the home of groups and tribes.⁽¹⁷⁾

In Christian Spain, feudal canons insisted upon a detailed schedule of deference. The Catalan hierarchy (see section 4, below) is a case in point: wealth increased as one ascended the scale from *sotcastlà* to count. [200] Another example is the way in which land was distributed in conquered Murcia in a descendant scale of value to the three classes of knights (*caballeros mayores, medianos, and menores*) and three classes of peasants (*peones mayores, medianos, and menores*).⁽¹⁸⁾ These were standard categories and were good predictors of real social rank, indicative of the permanence of these relations. The growth of a non-feudal, urban middle class created within this structure islands where titles to deference were differently based (although, as noted, burghers sought to assimilate themselves to the noble schedule). Only in the sixteenth century did the feudal structure of deference become an invalid predictor, as non-noble sectors controlled progressively more resources than the downwardly mobile *hidalgos*.

2. Structural Gains and Losses

At points when there is disjunction between the inherited social model and the actual configuration of society, the time is ripe for the emergence of new social forms, a time of experimentation symbolized in broad stylistic changes. In Smith's view, the lack of correspondence between the cultural model and the actual social structure is typically caused by decrystallization of social networks, by structural loss.⁽¹⁹⁾ It seems logical, though, that structural gain could also underlie such a transition. There were two periods in Andalusí history that produced stylistic revolutions of the dandy type, such as that of nineteenth-century England (Beau Brummel) that Smith takes as the typical case. Brummel's epoch was clearly one characterized by structural loss. Of the two such periods in Spanish Islamic history, the reign of 'Abd al-Rahmân II and Party Kingdom interlude, the second was a consequence of a decrystallization/crystallization cycle in which the fall of the Caliphate was a direct antecedent.

The reign of 'Abd al-Rahmân II (822-852) is more difficult to assess. Various contemporaneous phenomena, summarized in Table 4, can be placed in a gain column; others seem better characterized as loss. The epoch is remembered as one of stylistic revolution, associated with the introduction of 'Abbâsid-Persian institutions and fashions, the latter associated with the singer and courtier, Ziryâb, the kind of figure identified by Smith as an entrepreneur of style. The facts of Ziryâb's career are well-known. A black singer born in Iraq in 798 whose real name was Abû'l-Hasan 'Ali ibn Nâfi', he fell from favor at the court of Hârûn al-Rashîd [201] in Baghdad and arrived in al-Andalus just before the beginning of 'Abd al-Rahmân II's reign. Like Brummel later, he became an arbiter of style. He introduced Iraqi singing styles, created a music school, made changes in the form of the lute. He introduced toothpaste, popularized shaving among men, and decreed tonsorial styles. He taught Iraqi cooking and lent his name to a number of recipes. He influenced political decisions, such as the appointment of judges by the Emir, and his advice was sought on virtually all issues.⁽²⁰⁾ More important from our point of view than Ziryâb's innovations in fashion are the structural changes introduced in the administration of the Emirate and their significance in terms of changing social structure. It was said of 'Abd al-Rahmân II that he "organized the norms of the state."⁽²¹⁾

The initial administrative model in Islamic, as in Christian Spain, was a Roman one, in some instances modified by Visigothic practice. Livermore's characterization of early Islamic rule as a Neo-Roman system, while perhaps overlooking those aspects peculiar to segmentary societies, is nevertheless [202] suggestive. The *wali* (governor) was the equivalent of the late Roman *dux*, and there is a correspondence of the early division of Islamic *kûras* with Visigothic administrative districts. The Andalusí concept of the *kûra* seems to have been colored by Roman usage. In the East, provinces were conceived as units of agricultural land, following Persian administrative norms. In al-Andalus, administrative districts were centered in and consubstantial with cities and their hinterlands: there were very few wholly rural *kûras*.⁽²²⁾

The early governors had followed Syrian Umayyad practice by organizing the treasury, the army, and the administration of justice along territorial lines, which created a decentralized, tribally oriented polity wherein the vast Christian population was ruled by Muslim garrisons housed for the most part in towns. 'Abd al-Rahmân II remodeled governmental institutions along 'Abbâsid lines. He strove to concentrate power in the person of the emir, to establish a secure financial base for government operations by founding state monopolies (over coinage and textile production, for example), by bringing order and division of labor into the hierarchy of public officials (introducing new court officials based on eastern, ultimately Persian models -- the *hâjib* and *wazîr* -- and by establishing greater control over urban affairs. This last involved the introduction of a variety of 'Abbâsid officials, whose administrative authority ultimately derived from the *qadâ*, such as the *muhtasib* (a market master with widened jurisdiction and responsibility) and the urban prefect (*sâhib al-madîna*).

In this instance, dandyism seems tied to a crystallization process, whereby tentative arrangements based on the circumstances of conquest were yielding to more complex social needs, requiring an appropriate administrative response. One can find in the crucial process of conversion both crystallization and decrystallization, depending on whether one

chooses the vantage point of tribal society or of the masses. For the former, urbanization and the conversion of masses of people who fell outside the tribal structure implied a loss of structure in the traditional social networks. The more Neo-Muslims in the body politic, the less was tribal status a good indicator of the allocation of resources. Dandyism and administrative innovation were positive responses to a new social situation. The massacre of Christians and, later in the century, the terrible tribal *fitna* (perhaps the last gasp of the inherited social model of a tribally based polity) were also responses to a process of structural loss. From the point [203] of view of Neo-Muslims, however, conversion and all that it entailed were part of a crystallization process. The increasing mass of Muslims called for new institutions and social and cultural responses designed to meet their needs, particularly the creation of a society that was culturally and institutionally *Islamic*, rather than tribal in nature. We can associate the establishment of Malikism and the beginnings of a native school of *hadīth* with these impulses. The fact that Malikism had full official support beginning only in the reign of 'Abd al-Rahmān II substantiates this conclusion.⁽²³⁾

The second crucial juncture, that beginning with the failure of the centralized state created by 'Abd al-Rahmān II, had similar characteristics but with the signs changed. Dandyism, in similar guise of the aping of Iraqi customs which so characterized the Taifa courts, would seem more clearly part of a decrystallizing process. Structural loss and gain seem to be paired and sequential. In the ninth century, the coalescence of the centralized state (gain) initiated a wave of conflict throughout the tribal network (loss). In the eleventh, the fall of the Caliphate (loss) initiated a reorganization of the society in decentralized polities which seemed to respond well to economic and ethnic realities (gain).

The historiography of this episode is reminiscent in many respects of the catastrophic approach to the fall of the Roman Empire. The demise of the Caliphate has been represented as just such an unmitigated disaster, with no redeeming features. One exponent of the catastrophic view, Hussain Mones, asserts that the dismemberment of the Caliphate "not only surprises the Arab reader, but saddens him and fills him with disgust through considering the so-called Kings of Taifas as criminals who destroyed the unity of the Caliphate and who, naming themselves emirs and kings, sacrificed the common interest in order to satisfy their vain, egotistic, and sterile pride."⁽²⁴⁾ Besides the valuative judgment which virtually asserts that the Caliphate was good and its successors evil, there is also present in Mones' analysis the notion that great political events come about through the conscious will of leaders. Elsewhere he states that in deciding to abolish the Caliphate, the Andalusi aristocracy had demonstrated a complete lack of political clarity.⁽²⁵⁾ James Dickie, whose conclusion as to the significance of the fall of the Caliphate is the opposite of Mones', still lays equal emphasis on the conscious motivation of the actors. Thus he states that the aristocracy "had come to terms with reality by abolishing a meaningless institution, doing what they did in sorrow and [204] sensible of the implications of their action."⁽²⁶⁾ Interestingly, al-Shaḡundī, a thirteenth-century writer, asserted that the most illustrious subjects at the time of the dismemberment of the Umayyad state were unanimous in favoring the division of the Caliphate into Taifas because it led to the revvitalization of high culture.⁽²⁷⁾ Masked in al-Shaḡundī's observation is his awareness that the social model no longer fit the social reality. Thus he could view the Taifas positively.

All who discuss the fall of the Caliphate -- al-Shaḡundī excepted -- seem convinced that the reasons for it must lie in supposed deficiencies of the ruling Arab caste. W. M. Watt, for example, singles out "the absence of a middle class interested in maintaining a strong central government" as the prime structural deficiency leading to the collapse of the Caliphate.⁽²⁸⁾ But it is by no means clear that a middle class is a prerequisite of a stable government, just as it is not certain that shortsighted decisions by a few individuals can force the restructuring of an entire society.

The systemic nature of intergroup relations implies that the sources of a radical social shift represented by the fall of the Caliphate must be sought, not in the structure of one group, but in the relationship among all groups. The Caliphate fell because the ethnic equilibrium which had summoned the edifice into being was disturbed. The essence of the shift was that the Berber minority had grown dramatically in size and power just at the moment when the peak of the curve of conversion was reached.

The increment in Berber immigration was the result of military reforms carried out by the emirs as they consolidated power, beginning in the ninth century under al-Hakam I and 'Abd al-Rahmān II. At each successive stage, new African contingents were inscribed in the military register. During the reign of 'Abd al-Rahmān III, the settling of new Berber groups reached even greater intensity as the Caliph sought to balance the influence of restive Arab rivals.⁽²⁹⁾ At the same time another process, described by Lévi-Provençal as the fusion of Arabs and NeoMuslims, but more accurately the swamping of the former by the latter, was nearing completion, with the peak of conversion probably reached in the first quarter of the tenth century.

The political fragmentation of al-Andalus, therefore, was not so much a fall from grace as a realignment in keeping with a shift in the ethnic balance of power. The Berbers were strong enough to disrupt the central organization of the state, but not to capture that mechanism intact. But [205] then, the elaborate civil-military apparatus needed to manage ethnic and tribal cleavages had become obsolete, once the vast majority of the population was composed of ethnically homogeneous, more or less non-tribal Neo-Muslims. A new equilibrium was sought in the political organization of regional nuclei, in accordance with realistic demographic patterns.

The dismemberment of the Caliphate, once the *fitna* itself had subsided, did not materially disrupt the continuity of life in al-Andalus. (We have noted recent speculations that political regionalization was conducive to economic growth.) For reasons already stated, the locus of such continuity was, in rural areas, in tribal structures, and in the towns, in the jurisprudential class whose methods of training, recruitment, and political action were unchanged by the *fitna*. Then too, by the twelfth century at the latest, the majority of the *fuqahā'* must have been Neo-Muslims, and the society was culturally and socially more homogeneous -- even though politically fractionated -- than it had ever been under the Umayyads.

It is against this background that the eleventh-century transition must be considered. Again there is a strong stylistic component; again it is a component of Iraqi inspiration. The Taifa courts, as García Gómez indicates, strove to become "microscopic Baghdads." The problem

was that, unlike the Emirate of the ninth century, the eleventh-century experience was less a creative integration of useful innovations with broad social demand than it was the imposition of superficial styles and customs that had no resonance beyond the kingly courts themselves. Thus the Party Kings adopted lofty caliphal titles typical of 'Abbâsid usage (e.g., al-Muzaffar, "The Victorious"; al-Muqtadir, "The Powerful"), together with courtly pretensions that became ludicrous when reproduced on the petty scale of the period. Smith points out that the use of empty or vestigial titles which reveal nothing of the real lives and resources of their bearers (the antiquation of biographical models, he calls the phenomenon) is a sign of disjunction between model and reality. What is peculiar in this instance is that the titles, although historically vestigial, were deliberately introduced as part of a restructuring process. The feeling that Iraq was the center of all culture seems to have been reinforced in the eleventh century by tremors of insecurity permeating a society that lived in perpetual fear of conquest. In Urvoy's view, this insecurity explains the alienation of the intelligentsia after the fall of the Caliphate, as a consequence of which heterodox religious and philosophical movements began [206] to appear on the margins of society.⁽³⁰⁾ The Taifa period seems characterized by the simultaneous play of decrystallizing forces in the cultural sphere and crystallizing ones in the political and economic spheres.

A similar phenomenon, where social restructuring was symbolized by stylistic changes, is the instauration of Neo-Gothicism in the Asturo-Leonese kingdom, a movement which alludes to the restoration by Alfonso II in ninth-century Oviedo of the Visigothic model of kingship (and which is not to be confused with any artistic movement). This movement had only tenuous links with the Germanic past and was associated with the attempts of Alfonso II and the Bishop Pelayo to reorganize the civil and ecclesiastical organization of the kingdom. Pelayo wanted to establish Oviedo as a bishopric and also to establish continuity between Visigothic and Asturian sees. In civil administration, palace officials were assigned the lofty titles of Visigothic magnates, but were in fact absurd parodies. For example, the Notary Count had been an important official in the Visigothic court, but his counterpart in Oviedo was a simple scribe. The form or style of the reform was more significant by far than its substance, since it was impossible to recreate a peninsular-sized administrative apparatus in a small mountain kingdom with few financial resources.⁽³¹⁾

According to Sánchez-Albornoz, the wholesale adoption of Germanic norms (replacing late Roman ones) was well-suited to the rude psyche of these rural mountain communities.⁽³²⁾ However, this kind of stylistic change is more likely related to socio-economic changes than to group psychology. Signs of structural loss are clear in the economic crisis of the mid-ninth century, when Alfonso II replaced the gold standard with silver, causing devaluation and a price rise. Since Neo-Gothicism was in part designed to create a myth of continuity, the discontinuities that brought it into being are difficult to perceive. At the end of the century, under Alfonso III, when the kingdom was much expanded beyond its initial minute radius, it became clearer that a more complex kind of administrative response was necessary to manage a society which had grown and consolidated itself.⁽³³⁾

To return now to Smith's model: it is clear that stylistic changes affecting the development of society broadly are indeed reflections of points in socio-cultural evolution at which the prevailing model of social structure does not accord with what the structure of society

really is, or has become. From our point of view, however, style changes that are reflected [207] in administration, in norms of governance, are historically more significant than those of fashion only, and more difficult to explain. While structural loss (or gain) may call forth a demand for social innovation that is broadly based, administrative changes are made by a relatively small circle of elite persons. To interpret the significance of changes in administrative styles to discover what social changes called them into being, is to realize that crystallization or decrystallization may be taking place in social networks outside those which organize political life. The seeming anomaly of governments (as in ninth-century Asturias or eleventh-century alAndalus) adopting a hollow model merely demonstrates that aristocracies strive to fill voids in leadership, using whatever tools they have at hand. In some cases, the tool is cultural borrowing; in others, it may consist of the revival of an anachronistic model, in the hope that new life can be breathed into it; or an entirely new set of rules may be invented.

To turn briefly to cultural borrowing in administrative forms, and to return to the question, raised in the Introduction, of the controlling nature in cultural diffusion of the disparity in structuring between contacting societies: it appears that, at various junctures, when Christian and Islamic societies contacted, new social realities were created for which new models of organization had to be derived. In certain cases, the results were exaggerated and transitory: a case in point is the aping of Arab customs by the Christian conquerors of Zaragoza, who donned Muslim garb and played at being *shaykhs* for a time. But behind this passing experiment, which constituted a form of social modeling, there was a demand established for the borrowing of administrative practices by the less highly structured Christian society from the more highly structured society of the Muslims. Thus Julián Ribera's theory that the *justicia* of Aragón was an imitation of the Islamic appeals judge (*mazâlim*) has meaning if considered against this background. There was ample precedent in the Christian world. In León and Castile, the Andalusí *sâhib al-sûq*, later *muhtasib*, was adopted (as *zavazoque*, *almotacén*) at a time when the Christian states lacked the administrative sophistication of the more complex contacting society. The same was true in the thirteenth century, when Christian control of medical practice among subject Muslims and Jews was highly conditioned by the Muslim model of open access to medical practice. Another example is the Christian assimilation of the *dhimma* model for dealing with ethno-religious minorities, a clear example of the migration of a model of social organization from a socially more complex society to [208] one which had no ready-made solutions for such a problem.⁽³⁴⁾ Such contacts, in sum, created a situation in which the less-structured society perceived a sense of disjunction with the contacting society. This perceived lack of fit is one of the primary forces creating demand for cultural borrowing, just as the internal evolution of one society can create a demand for new social models.

3. State Systems of the Eleventh Century

The eleventh century, in both peninsular societies, was a period of political consolidation. In Christian Spain the political entities that were to direct the southward expansion, the kingdoms that would share political power for the rest of the middle ages, emerged at this time. Frontiers between kingdoms, spheres of influence or of politico-economic objectives with regard to al-Andalus, and norms of administration began to acquire coherent form.⁽³⁵⁾ In al-Andalus an analogous process unfolded, involving the development of states whose

rationale was a curious combination of territoriality and tribalism. In both cultures, the emergence of these states presupposed the crystallization of subcultural entities in distinct regional foci, a process which led to the emergence of culturally distinctive political entities in Christian Spain but which was aborted in al-Andalus by attrition of territory.

The state system of the Party Kingdoms was founded on a paradox. On the one hand, as Guichard indicates, the concept of the territorial state dawned only slowly in the Islamic world. Political units, since they were ultimately defined by patterns of tribal relationships, lacked precise boundaries. Indeed, there was no interest in establishing such lines of demarcation. (The early Arabic chronicles refer to the Asturian kingdom simply as "the Banû Adfansh"—the sphere of influence of the "sons of Alfonso," conceived tribally.) On the other hand, the ongoing processes of urbanization, detribalization, and conversion meant that the Andalusi polity was steadily being deprived of its tribal ligaments, leaving as an unavoidable alternative a state encompassing some notion of territoriality.

The Arab and Berber dynasts who replaced the transitory slave rulers derived power from groups who had common ethnic interests, even if tribal ties had weakened. The division of states among Arabs and Berbers corresponded well with patterns of ethnic settlement which in some cases dated to the eighth century. Already noted (in Chapter 5, section 3) was [209] the tendency of Taifa kings to form ethnic coalitions. The political shape of such alliances is typical of segmentary politics in general. Particularly among Berbers, alliances were at a distance, to avoid direct conflict with allies over resources (pasturage, for example). This gives rise to the famous checkerboard pattern of political alliances so characteristic of North Africa, but which in modified form can be detected in eleventh-century al-Andalus -- as when, for example, Seville was opposed by Badajoz to its west and Granada to its east. The original dispersion of tribes throughout the peninsula, settling in widely scattered foci, isolated from their fellow tribesmen, yet remaining in contact through networks of familial relationships, responds to the same impulse and served to reinforce the pattern when regional entities became fully independent in the eleventh century.⁽³⁶⁾

The apparent fluidity of boundaries of the Taifa kingdoms is in part masked by family-based mergers and disaggregations, as for example the absorption of the kingdom of Denia in 1076 by al-Muqtadir of Zaragoza and of the kingdom of Lérida-Tortosa, ruled by his brother al-Muzaffar, three years later. The changing political boundaries obscure a fairly stable association between one family (the Banû Hûd, in this case) and a particular territory. If the frontier kingdoms (Toledo, Zaragoza) seemed to manifest greater cohesion, it was because of the conditions required by military preparedness.

The kings of the Christian states also did not have kingdoms with stable frontiers until the thirteenth century. Instead (in Maravall's characterization) they ruled over variable space whose boundaries changed in accordance with considerations of kinship.⁽³⁷⁾ Christian society, with its recent roots in mountain states of small area, was unaccustomed to ruling over large spaces, a historical circumstance reinforced somewhat by the steady growth of seignorial domains. The propensity for kingdoms to unite and disunite was as marked on the Christian as on the Muslim side. Sancho el Mayor divided his kingdom among three sons, who inherited Navarre, Castile, and Aragón, respectively. Later, Ferdinand I also willed

a tripartite division of his realm. In view of this flux of political boundaries, Pastor suggests that a more realistic view of social structure may be gained from studying economic regions (such as the Santiago road axis of the eleventh and twelfth centuries) rather than focusing on political entities which lacked geographical stability.⁽³⁸⁾ The same is even more applicable to the Taifa kingdoms: if one focuses on economic regions [210] (an Ebro region, a Toledo region, a Levantine region, and so forth), greater continuity is apparent than would appear from the kaleidoscopic mutations of kingships.

The emergence of the Christian kingdoms and the crystallization of cultural or subcultural units associated with particular territories were achieved on a political level by interrelated groups of nobles, who were the first to perceive ethnic solidarity.⁽³⁹⁾ Rivalry between groups of nobles easily found territorial expression, as in the enmity between León and Castile, involved in competition over spheres of influence in conquered territory.⁽⁴⁰⁾ With Sancho el Mayor the center of gravity in the west shifted decisively from León to Castile, a process which gained force when Castile became a kingdom under Ferdinand I, and which culminated in the coronation of Alfonso VII of Castile as Emperor in 1135. Castilian hegemony was in all probability the result of the military power and prestige which its nobles won, as the most aggressive force in the battle against the Muslims -- a response to its forward position on the frontier. In sum, there seems to have been a certain convergence in political form, if not in content, in the two cultures. To regard the title of Taifa kings as fictive, presumably on the grounds of an imprecise or undervalued notion of territoriality, is to put a very different reading on similar geopolitical fluidity in the Christian states. The terms of the political equation were similar, although the proportions of course varied: boundaries (however conceived) were determined by considerations of kinship; they shifted for dynastic reasons; cohesion and continuity were provided by growing ethnic consciousness and by economic regionalization.

4. Feudalism

Feudalism was a term coined by seventeenth-century political theorists and historians to describe a set of relationships thought to have been typical of medieval society. These were relationships of dependence among persons of unequal status, were generally based on land tenure arrangements, and were thought to represent a privatized political structure called into being by the absence or weakness of a central or public authority. This set of relationships seems appropriate for comparative analysis, the received view being that in the peninsular states they were most sharply structured in Catalonia, imperfectly articulated in Castile and León, and scarcely developed in al-Andalus.

[211] In the present discussion, the development of "feudal" relationships, especially in Christian Spain, is seen as one element in a process of social crystallization which created patterned bonds of solidarity among individuals and social groups and therefore is viewed more as a factor of cohesion than of disaggregation.⁽⁴¹⁾ The forging of such bonds was one of a number of processes following upon the structural loss caused by the Islamic conquest, and its primary function in the Christian kingdoms was not to substitute private for public authority (a process that was aborted or at least delayed in Spain) but rather to create solidarities to complement progressively weakening kinship ties.

The discussion of feudalism in medieval Spain has been characterized by an overly facile and uncritical acceptance of an evolutionary model which assumed that all European states passed through pre-feudal, feudal, and post-feudal stages. Liberal historians of the nineteenth century proposed that countries where the implantation of feudal norms had been incomplete (Spain, England) were more advanced at the time and had escaped in some measure the servitude of man to man that was abhorrent to liberal ideals. The problems caused by an evolutionary model are not difficult to appreciate. It posits that there was a palpable classic feudalism which can be identified as having functioned in specific places and times, when in fact the concept was originally no more than a heuristic device. It follows that the model is accepted as a norm and therefore societies not meeting the norm can be typified as deviant. Such deviance can then easily be related to similar notions of a teleological nature, used to buttress Spain's supposedly unwholesome "deviation" from a "normal" historical course.⁽⁴²⁾

In its etymological sense, feudalism indicates a land-tenure structure based on the fief (Latin, *feudum*), a grant of land in return for military service and an oath of fealty. This is the primary criterion by which it is argued that feudalism was incompletely developed in Castile. But the term has extended meanings -- to characterize an entire society as "feudal" (Marc Bloch), indicating that "feudal" values typified an entire society whose land tenure and personal relationships were so structured or to characterize, as Marxist historians often do, the medieval economy as a "feudal" mode of production.⁽⁴³⁾ Other authors detect the form of feudal relations but find the substance wanting. Thus, Burns asserts that thirteenth-century Catalonia was feudal in structure but that "a most imperfectly feudal soul inhabited this body" -- in particular, that in spite of [212] feudal-style personal linkages among persons of unequal rank, in fact there was "a tendency at all levels towards independent [land] holdings."⁽⁴⁴⁾

Sánchez-Albornoz has demonstrated the existence of "pre-feudal" relationships in the Visigothic kingdom, where *fideles* of the king were rewarded for their service by precarious grants of land or income. Subsequent to the Islamic invasion, the circumstances of constant warfare strengthened the monarchy, whose access to wealth in the form of war booty made it possible to pay salaries for military service and therefore to avoid having to organize the state on the basis of a feudal hierarchy linked to the king by vassalatic-benefice relations. Court officials were also paid, and it was not necessary to make such offices hereditary. There were, then (as summarized by Valdeavellano) seven reasons why full-fledged feudalism never emerged in Spain: (1) Benefices were not linked to vassalage. Land grants were frequently made without requiring an oath of fealty in return. And the reverse was also true: vassalage did not inevitably require the grant of a benefice. (2) Hence, the true fief never became established as the central element of the relationship between the monarchy and the nobility. (3) Immunities were never as common as they were in France. Indeed they became comparatively more common only in the late eleventh century as an element in adaptation of French political styles during that period. (4) Royal prerogatives were rarely ceded to lords and royal justice (as in England) was still felt even in supposedly immune jurisdictions, owing to the influence of Roman law. (5) Public offices did not become hereditary. (6) With the exception of Catalonia, there was no tightly structured feudal hierarchy. (7) There was strong resistance to the subinfeudation of domains.⁽⁴⁵⁾

The feudal hierarchy in Catalonia represented the closest peninsular approximation of the French model, an apparent result of the region's Carolingian background. The upper nobility (*ricshomens*) consisted of counts at the top of the feudal hierarchy, then viscounts, *comitores* (aides of the former), and *vasvessores* (vassals of viscounts and *comitores*). The vassals of these, holding subinfeudated grants, were the knights (*cavallers*, the equivalent of the Castilian *infanzones*), who were chatelains of single castles. Their vassals were *sotcastlàs*, who had grants sufficient to support a horse and arms.⁽⁴⁶⁾ Even so, as Burns and others have noted, fiefs could be alienated without the lord's consent and the feudal structure was looser than that envisioned in the classical model.

[213] As a system of governance, however, it is doubtful that even Catalonia could be characterized as substantially distinct from the other Iberian kingdoms. The strong impress of French feudal norms received in the late eleventh and twelfth centuries (when virtually a wholly French feudal terminology was introduced) was counterbalanced by the ability of all Christian monarchs to create civil bureaucracies from the funds made available by *parias*, tribute received from the Islamic kingdoms. Castro's bizarre notion that "One obvious reason for the absence of feudalism was the fact that the royal power at times reached the people by way of officials and institutions that were not Christian" is a reflection of the variegated nature of civil administration.⁽⁴⁷⁾ Of course, the fact that the Islamic *muhtasib* should appear in Castilian towns as the *almotacén* and in Levantine towns as the *mustasaf* has nothing to do with feudalism or the lack of it. More accurate is Sánchez-Albornoz's inference that the model of a highly structured civil and military bureaucracy in al-Andalus emboldened Christian rulers to institute central controls rather than diffusing administration and jurisdiction in a feudal network. That the Castilian tax-collecting official should have an Arabic title, *almojarife*, is simply proof of the fact that a centralized fisc was an attractive model, given the obvious ability (clear to Christian rulers) of Muslim kings to control the wealth of the state.

Comparison with Islam also reveals the kinship-substitution role of feudal relations. Where elite recruitment and deference entitlement were based on kinship, within a tribal framework, there was no need for the development of feudal-type relations. There, the *iqṭā'* or "money fief" existed purely for the purpose of remuneration of military or government service and was not hereditary. Those areas of the Islamic world where the *iqṭā'* was most highly developed, as in Mamluk Egypt and Syria, were slave bureaucracies in which elite recruitment was on a non-tribal basis.⁽⁴⁸⁾ If one looks at relationships of dependence, apart from the organization of the state, however, it seems that there were ample points of convergence. As mentioned in the discussion of clientage in Chapter 4, Visigothic customs of personal dependence may have bolstered clientage relations between Mozarabs and Neo-Muslims and their Arab overlords.⁽⁴⁹⁾

In the western Christian kingdoms, we have noted that the *mesnada*, the group of warriors in the service of a lord, tended to have the coloration of extended kinship groups. More exactly, it was an institution intermediate between a kinship and a feudal structure. Royal vassals received land [214] grants which they were able to make hereditary, but remuneration for actual services was either by salary or by precarious grants (*préstamos*), which were lost to the vassal if he failed to perform the service.⁽⁵⁰⁾

The introduction of French feudal norms in the eleventh and twelfth centuries seems another example of a stylistic shift called into being by structural consolidation causing a lack of fit between the social model (in Castile, one laid down in the period of resettlement of the Duero Valley) and the actual structure of society which had become more stratified and more complex. Many have noted the formal nature of feudal relations, that they gave normative meaning to preexisting relations without affecting their structure.⁽⁵¹⁾

Notes for Chapter 6

1. Thomas Spence Smith, "Aestheticism and Social Structure: Style and, Social Network in the Dandy Life," *American Sociological Review*, 39 (1974), 735-736. Note Reyna Pastor's use of similar terminology -- "destruction" and "structural recomposition" (*Del islam al cristianismo*, p. 10). However, the scope of these terms is limited to the description of the restructuring of economic organization and land-tenure arrangements where the countryside was literally destructured through the loss of Muslim inhabitants and reconstituted with a wholly new Christian population.

2. See Smith, "Aestheticism and Social Structure," p.742 n. 10.

3. Américo Castro, *The Spaniards*, pp. 213-214 (emphasis mine). J. A. García de Cortázar, *Epoca medieval*, pp. 50 (emphasis mine), 111; cf. p. 124 for his characterization of Almohad rule as "superstructure." See Guichard's critique of Sánchez-Albornoz, *Al-Andalus*, p. 496.

4. Guichard, *Al-Andalus*, p. 272.

5. *Ibid.*, pp. 472, 519.

6. Burns, *Islam under the Crusaders*, p. 413.

7. Pastor's explanation of the "political insufficiency" of Islam (*Del islam al cristianismo*, p. 56) is a gross misconstrual of the nature of Islamic society in which, she states, all believers are like a tribe. If anything, the *umma* was intended to be deliberately non-tribal.

8. Guichard, *Al-Andalus*, pp. 380, 549, 551; Ibn Khaldûn, *The Muqaddimah*, I, 47, 61.

9. On the theme of social stability in the face of political instability, see Torres Balbás, *Ciudades hispanomusulmanas*, p. 322; Guichard, *Al-Andalus*, p. 99; Turner, *Weber and Islam*, pp. 81, 172, 174; Goitein, *Mediterranean Society*, II, 348.

10. Urvoy, "Etude sociologique," pp. 233-234; Turner, *Weber and Islam*, p. 55. See also, Burns, *Islam under the Crusaders*, p. 403.

11. Turner, *Weber and Islam*, pp. 87, 105, 111, 172; Goitein, *Mediterranean Society*, II, 366; Urvoy, "Etude sociologique," p. 232.
12. Mones, "Hommes de religion," p. 78. The disinclination to serve may not have been purely religiously based. Government service was a risky enterprise, and the middle class preferred the stability of business or scholarship; see Goitein, *Mediterranean Society*, II, 375.
13. Al-Khushanî, *Historia de los jueces de Córdoba* (Aguilar ed.), pp. 561-562 (a judge in Sidonia called to Córdoba); 707 (a judge in Elvira, then Córdoba). Cf. Pp. 205-206, where one of the descendants of 'Umar ibn Xarahil, who spawned a family of amins and judges, was judge in Jaén and Ecija. Ibn al-Zubair, *Silat al-Sila*, *passim*.
14. Ibn Khaldûn, *The Muqaddimah*, I, 53. On the nature of the council of elders, see Burns, *Islam under the Crusaders*, pp. 386-400.
15. Urvoy, "Etude sociologique," pp. 283-284.
16. K. Garrad, "The Original Memorial of Don Francisco Núñez Muley," *Atlante*, 2 (1954), 219.
17. Guichard, *Al-Andalus*, pp. 59, 21; Ibn Khaldûn, *The Muqaddimah*, I, 61, 316.
18. Valdeavellano, "Las instituciones feudales en España," p. 292; Torres Fontes, *Repartimiento de la huerta y campo de Murcia*, p. 89.
19. Smith, "Aestheticism and Social Structure," p. 736.
20. On Ziryâb: Makkî, *Aportaciones orientales*, pp. 181-182; Dozy, *Spanish Islam*, pp. 261-265; Huici Miranda, *Cocina hispanomagribi*, p. 179. On dandies as a social group, see Mhammed Ferid Ghazi, "Un groupe social: Les raffinés (*zurafâ'*)," *Studia Islamica*, 11 (1959), 39-71, especially pp. 48-50, 65-67.
21. *Rattaba rusûm al-mamlaka* (Makkî, *Aportaciones orientales*, p. 179). Makkî also notes (p. 190) that there was greater interest in establishing legal norms in ninth-century al-Andalus than in the study of tradition (*hadith*), *per se*.
22. Livermore, *Origins of Spain and Portugal*, pp. 302-303, 355; Bosch Vilá, *Albarracín musulmana*, p. 41; 'Abd al-Karîm, *Al-Andalus en el "Mu'jam al-buldân" de Yâqût*, pp. 22, 27.
23. Makkî, *Aportaciones orientales*, p. 94.
24. Hussain Mones, "Consideraciones sobre la época de los reyes de Taifa," *Al-Andalus*, 31 (1966), 323-324.
25. *Ibid.*, p. 307.

26. James Dickie, "Ibn Suhayd: A Biographical and Critical Study," *Al-Andalus*, 29 (1964), 284.
27. Al-Saqundî, *Elogio del islam español*, p. 47.
28. W. Montgomery Watt, *A History of Islamic Spain* (Edinburgh, Edinburgh University Press, 1965), p. 87.
29. Cagigas, *Andalucía musulmana*, pp. 20-21; Lévi-Provençal, *L'Espagne musulmane au Xème siècle*, pp. 23-24.
30. E. García Gómez, "Bagdad y los Reinos de Taifas," *Revista de Occidente*, 43 (1934), 9; Pérès, *Poesie andalouse*, p. 49; Urvoy, "Etude sociologique," pp. 287-288.
31. Maravall, *El concepto de España en la edad media*, pp. 300, 314; Claudio Sánchez-Albornoz, "La restauración del orden gótico en el palacio y en la iglesia," in *Orígenes de la nación española*, II, 623-639.
32. 32.Sánchez-Albornoz, "Tradición y derecho visigodos en León y Castilla," *Investigaciones y documentos sobre las instituciones hispanas*, p. 129.
33. Sánchez-Albornoz, "El precio de la vida en el reino astur-leonés hace mil años," p. 384. For further evaluations of Neo-Gothicism, see Castro, *The Spaniards*, pp. 180, 183; García de Cortázar, *Epoca medieval*, pp. 133 (as superstructure), 291; and Barbero and Vigil, *Orígenes sociales de la reconquista*, p. 97.
34. On the conquerors of Zaragoza, see Verner, *Los musulmanes españoles*, p. 33; Ribera's theory is expounded in *Orígenes del justicia de Aragón*; on the diffusion of *hisba*, Chalmeta, *El señor del zoco*, and Glick, "Muhtasib and Mustasaf"; on medicine, Luis García Ballester, *Historia social de la medicina en España de los siglos XIII al XVI*. Vol. I. *La minoría musulmana y morisca* (Madrid: Akal, 1976), pp. 47, 52; on the *dhimma* model, Burns, *Islam under the Crusaders*, p. 163.
35. See García de Cortázar, *Epoca medieval*, p. 323.
36. Guichard, *Al-Andalus*, pp. 47, 338; on Berber alliances, see Seddon, "Local Politics and State Intervention," p. 125.
37. Maravall, *El concepto de España en la edad media*, pp. 358-359, 388.
38. Pastor, *Conflictos sociales*, p. 17.
39. *Ibid.*, p. 53.
40. See Moreta, *San Pedro de Cardeña*, p. 52.

41. Cf. Maravall's view of feudalism as a unifying system rather than as a factor of decomposition (*El concepto de España en la edad media*, p. 387).

42. See Elizabeth A. R. Brown, "The Tyranny of a Construct: Feudalism and Historians," *American Historical Review*, 79 (1974), 1063-1088, especially p. 1076. The notion that the Islamic invasion caused a detour (*desviación*) in the historical route of Spanish history is that of Sánchez-Albornoz, who also argues that the circumstances of the Reconquest inhibited the normal development of European-style feudal relations. See Castro's oblique criticism of this aspect of Sánchez-Albornoz's thought in *The Spaniards*, p. 172.

43. See Pastor, *Conflictos sociales*, p. 17 n. i6, where she states that the mode of production in medieval Castile was feudal although the feudal system was not normative. Also, cf. p. 1861 where a "seignorial economy" is defined as the exploitation of servile or semi-servile labor; but "seignorial" is not "feudal" in the strict sense.

44. Burns, *Islam under the Crusaders*, p. 275.

45. Sánchez-Albornoz, *España: Un enigma histórico*, II, 56-74, and "Repoblación del reino asturleonés," pp. 437, 429; García de Cortázar, *San Millán de la Cogolla*, p. 318 (on immunities); Valdeavellano, "Las instituciones feudales en España," p. 235. On resistance to subinfeudation, see Lewis, *The Development of Southern French and Catalan Society*, p. 76.

46. Valdeavellano, "Las instituciones feudales en España," p. 292.

47. Castro, *The Spaniards*, p. 427.

48. Claude Cahen, "Iktâ," *EI*², III, 1088-1091; Lévi-Provençal, *España musulmana: Instituciones y vida social*, p. 115; Pedro Chalmeta, "Le problème de la féodalité hors de l'Europe chrétienne: Le cas de l'Espagne musulmane," *II Coloquio Hispano-Tunecino* (Madrid, 1973), pp. 91-115.

49. See Guichard, *Al-Andalus*, p. 560 n. 4, and bibliography cited.

50. Valdeavellano, "Las instituciones feudales en España," p. 243.

51. Brown, "The Tyranny of a Construct," commenting on Georges Duby.

PART TWO

MOVEMENT OF IDEAS AND TECHNIQUES

7

TECHNOLOGY

1. Modalities of Innovation and Change

[217] Technology, in its broadest sense, includes all those artifacts and techniques that human beings use to adapt the natural environment to the needs of the species. Thus I have already discussed (in Chapter 2) the development of *technologies* of agricultural land use in consonance with the differing cultural, economic, and environmental conditions prevailing in Islamic and Christian Spain. In the present chapter the discussion will focus on the artifacts of agricultural and industrial development, in the hope of illustrating, with the movement of concrete cultural elements, general trends in the contact of cultures. In so doing, I hope to avoid, for the moment, the polemical charges carried by other areas of cultural and social experience (religion, art, and literature) and to develop lines of argumentation drawn from evidence which, in the context of the polemic of medieval Spanish historiography, may be considered as neutral. Earlier, I mentioned that both Castro and Sánchez-Albornoz regard technological evidence as essentially devoid of historical significance, a judgment which contemporary historiography cannot accept. Not only do economists well appreciate the correlation between technological innovation and economic growth, but geographers, anthropologists, and historians of technology have established the central significance in human society of technological diffusion and the factors controlling it.

In general, the movement of technological diffusion in the high middle ages followed a trajectory from China and India to the West, through the mediation of Persia, which was also a hearth of technological innovation. Sinologists, like Joseph Needham, tend to stress the consistency, longevity, and hence the slowness of this cultural flow. Islamists, like Juan Vernet, tend to stress the speed of diffusion. Both viewpoints are correct as generalizations. There tended to be substantial lags between the invention of a technique in China and its eventual arrival in the West; after the Arab conquests, however, Eastern techniques diffused much more rapidly once they gained the borders of the Islamic world. Thus the Chinese were more than one thousand years ahead of Europeans in the development of certain [218] foundry techniques, or even simpler devices such as the wheelbarrow. Yet, the use of paper was diffused from Samarkand in the mid-eighth century to al-Andalus by mid-tenth, and "Arabic" (that is, Indian) numerals diffused throughout the Islamic world in the ninth century, in a matter of decades.⁽¹⁾

The spatial configurations of technological diffusion were largely controlled by patterns of trade and by local or regional supplies of resources. These two sets of factors together produced foci of regional specialization whereby each town had one or more specialty products, assuring it a place in the regional or international market. The imitation of foreign products (which can be traced in historical sources owing to the generalized custom of naming a certain product after the place where it was originally manufactured) was both a function of the configuration of commercial networks and a stimulus for technological change in localities along the path of diffusion.⁽²⁾

The close technological interdependence of contiguous districts is also apparent. Several examples will suffice to illustrate this point. A twelfth-century letter published by Goitein reveals the ordering by a Jewish goldsmith in Fez of a set of scales from a scales-maker (*mayâzînî*) in Almería. (The *mîzân* is the common Persian scale, suspended from a central, fixed pivot.) The incident makes clear the technological interdependence of Morocco and al-Andalus, which is a concomitant of the commercial interdependence alluded to in Chapter 3. Not only did Islamic Spain supply the Magrib with precision products, such as scales and weights, but apparently imposed its weighing standards upon Fez as well.⁽³⁾ The technological interdependence of Christian Spain both with al-Andalus and with France is seen in the development of the textile industry in the thirteenth century, based upon the diffusion of Andalusí and French styles and techniques, as well as by the migration of artisans familiar with them.⁽⁴⁾

Environmental constraints were particularly crucial in the Islamic Mediterranean world, which was lacking in resources necessary for the development of certain crafts. Chronic wood shortages limited the growth of industries that consumed large amounts of fuel: pottery, glass, sugar refining, and the metal trades. The last was particularly critical and, although Islamic Spain was better endowed with wood than the Islamic East, my impression is that iron was less widely used there than in Christian Spain at a comparable stage of development, and that Andalusí [219] tended to use hardwood for implements (mill and noria bhearings, for example) commonly made of iron in the northern kingdoms.⁽⁵⁾

On the other hand, lack of water was a spur to technological innovation, as demonstrated by the multiplicity of hydraulic devices diffused from east to west. (To the extent that their efficiency was affected by the availability of suitable woods and iron for fittings, these devices were also developed in consonance with availability of materials locally, and their construction differed accordingly from place to place.)

The study of technology in medieval Spain presents a host of difficult methodological snares. The two cultures frequently had duplicate sets of terms for the same, or similar, artifacts. Thus when interpreting a chance mention of a technological device described in a Latin document by an Arabism, or in an Arabic source by a Latinism, the scholar must decide whether the artifact itself has been diffused, or only the name. According to Bertrand Gille, foreign names are generally not applied to autochthonous artifacts, although imported ones may be renamed in the language of the recipient culture. Artifacts with foreign names can be assumed to have originated in, or at least to have been transmitted through, the culture in question.⁽⁶⁾ Some refinements of this general scheme

will be suggested below. In many instances, a definitive conclusion regarding the origin of a technological artifact (without archeological, iconographic, or ethnological evidence to support it) is impossible. Yet in all cases terminology is significant, because names represent perceptions based on some real situation. Arabs did not invent the olive press, but they developed olive oil production to such a great extent that the Christians, who depended on Andalusian sources of supply, adopted the Arabic terminology for most of the implements used. Because technological artifacts tend to pick up descriptive terms which stay with them as they cross cultural boundaries, it is generally simpler to trace the history of a borrowed element than one which develops autochthonously.⁽⁷⁾

There always seems to be a fairly significant lag between the invention or adoption of an artifact and its first documentation. Indeed, in traditional artisanal societies many innovations were kept secret and passed down among members of a family (for example, formulae for glazes and dyes), presenting the historian with insurmountable problems. On the other hand, many medieval techniques extended into modern times, protected intact and unchanged by the inflexible structure of traditional craft organization. To what extent, for example, are Henry Cock's 1585 [220] description of the earthenware potting techniques of Morisco artisans, or Floridablanca's very similar 1785 account of lustreware glazing, representative of medieval practices? What is the value to the medievalist of contemporary ethnological evidence? George M. Foster surveyed the traditional crafts of contemporary Spain in order to ascertain to what degree Spanish techniques influenced the traditional technologies of Latin America.⁽⁸⁾ It seems feasible to apply the same method to reconstructing the traditional techniques of Muslim Spain.

2. Continuity and Change in Medieval Iberian Technology

The basis of medieval craft industries was the small workshop operated by a family within which the mastery of a given trade was passed down from father to son. This sharp circumscription of career mobility is generally viewed by anthropologists as resistant, if not inimical, to technological innovation. The extended family serves, therefore, as a medium for technological continuity (particularly in crafts where secrets are passed on), enhanced by the constraints of a local economy that afforded a rather slight return on investment. Traditional artisans place a high value on a rigorous adherence to proved techniques. The economic risk involved in trying a new technique will generally be thought too high. In a family-run pottery establishment, for example, any change in the composition of clay or glazes, or in the firing procedure, could result in the loss of an entire kiln-load, or, even if the change were successful, in the loss of clientele accustomed to a particular ware. The view of French *urbanistes* that technological stagnation is at the root of occupational immobility in traditional Islamic towns is a reversal of the sequence of causation. The occupational structure, which in turn is related to that of the family, is a hindrance to technological innovation.⁽⁹⁾

The social structure of traditional artisanry to a great extent precluded the internal generation of technological innovation. In medieval times the cycle was typically broken in two ways: by the creation of a market for a product necessitating new techniques or by the migration of artisans who practiced them. Mere exposure to a foreign product did not result automatically in its imitation by local craftsmen. In general, imitation seems to have

been predicated on the migration of artisans. If market demand could be fulfilled by trade, there was no incentive to imitate. Imitation, both in Andalus and Christian towns, seems to have occurred only when the demand of the urban population was so great that local production [221] was deemed economically competitive. The same pull of demand acted as an attraction to foreign artisans, so these two causative factors were intimately intertwined. Moreover, the rupture of established commercial ties or the destruction of centers of manufacture by conquest also resulted both in the dislocation of technologies and in the imitation of foreign goods to fill the vacuum caused by the commercial disruption.

MIGRATION OF ARTISANS

The migration of artisans was a hallmark of economic development in Islamic and Christian Spain alike and only serves to underscore the interdependence and lack of autarchy of medieval economies. The mobility of artisans was a function of economies of scarcity, wherein finished products, technical services, and the skilled persons who provided them were all in short supply. Migration was a response to demand for the artisan's particular skills, providing an obvious avenue of social and economic betterment. Frequently, though, such movements were not left to the whims of the marketplace but were encouraged and even mandated by rulers or powerful persons.⁽¹⁰⁾ A number of examples will serve to illustrate the generality of these phenomena.

In the Islamic world, people involved in maritime technologies were particularly mobile, owing to the salience of sea-borne commerce. Red Sea navigators were prominent in the ports of southern Spain. The pottery center of Málaga attracted eastern potters, particularly in the wake of social upheaval. Thus Egyptian lustreware potters migrated there after the Fatimid collapse in the twelfth century, and their descendants were joined at the end of the thirteenth by Persian potters fleeing the Mongols. Under the Almoravids and Almohads, technological exchanges between al-Andalus and Morocco were frequent. To build a palace and fortifications at Gibraltar, 'Abd al-Mu'min, the Almoravid caliph, recruited carpenters and masons from Seville, as well as an architect, Ahmad ibn Bâso, and at the same time sent to Marrakesh for another Andalusian engineer and geometrician, Ya'ish of Málaga, then working in the Magrib. Early in the next century Muhammad ibn al-Hajj of Seville was commissioned to build a great hydraulic wheel in Fez. Andalusian artisans -- for example, shoemakers -- also migrated to Egypt and other points in the east.⁽¹¹⁾

An incident recorded by al-Khushanî in tenth-century Córdoba further illustrates the function of Islamic internationalism in the transfer of techniques. In a case heard before the judge Sulaymân ibn Aswad, a complaint [222] was raised against an oven whose smoke was considered a public nuisance. The judge ordered that a tube should be placed on top of the oven to carry the smoke away. Al-Khushanî comments that Sulaymân must either have personally observed this custom in the East or heard that ovens were built in that form there, and consequently ordered that the technique be imitated in al-Andalus. The Islamic legal system, involving the circulation of traditions and precedents in jurisprudential circles throughout the Islamic world, functioned in this way as a medium for technological diffusion.⁽¹²⁾

In Christian Spain, we have noted, easy access to the finished products of Andalusí artisanry retarded the development of local craft industries and inhibited the migration of technical specialists, at least until after the cessation of tribute payments in the late eleventh century. Nevertheless, artisans were certainly prominent among Mozarab immigrants in León. The defenses of tenth-century Zamora were built by masons (*alarifes*), presumably Mozarabs, from Toledo. Mozarabs were also prominent in mill-building activities: a document of 905 describes the construction of a mill by a converted Jewish monk named Habaz, clearly of Andalusí origin, along with his own workmen. In 1032, another Mozarab, Cidi Domínguez, rebuilt some mills on the Bernesga River. Twelfth-century documents literally effervesce with citations of French artisans: Robert the Smith, Archimbault the cask-maker, Rainault the goldsmith, in Estella; Clement and Gervasion, tailors, in Salamanca; Bernard *tiser* (weaver) and Bertrand, of the same profession, in Zaragoza; Pictavi of Poitiers, a tanner in Lérida, whose urban industries also attracted weavers from southern France. The development of Romanesque architecture and the great need for defensive constructions in the eleventh century motivated the importation of foreign architects and masons: French and Italians to rebuild the ramparts of Salamanca; Italians to work on projects in Catalonia. To enhance the development of crafts deemed Islamic specialties, Muslim artisans were sought. In the early thirteenth century, James II of Aragón both imported Muslim cotton masters from Sicily to Catalonia and dispatched Muslim silk masters from Spain to Sicily.⁽¹³⁾

TECHNOLOGICAL CONSEQUENCES OF CONQUEST

The contact of cultures that results from conquest either has the effect of inducing technological diffusion from the dominant to the conquered [223] group, or in the opposite direction, or it may result, through the assimilation or emigration of the conquered, in technological loss or displacement. Sources shedding light on early technological exchanges between Arabs and Berbers, on the one hand, and Neo-Muslims or Mozarabs, on the other, are entirely lacking. Nevertheless, the Hispano-Romans had skills that their conquerors lacked and subsequently adopted. We know that the Mozarabs retained skills connected with cart-making, as the migration of wheelwrights to León testifies. A related craft, that of the cooper, was also diffused from the native population to the conquerors. The Andalusí Arabic term for cooper was *kawwâb* (from Romance, *cubo*, cask); there was a cooper's mosque (*masjid al-kawwâbin*) in Córdoba.⁽¹⁴⁾

There is considerable documentation to illuminate the technological transitions accompanying the Christian conquests of the thirteenth century. In general, Christian rulers made concerted efforts to keep Muslim-owned industries going, particularly those crafts deemed to be Islamic specialties. Thus Alfonso X ordered in 1281 that no pottery works were to be built in Córdoba unless in the Muslim style; similarly, James I of Aragón encouraged the continuity of the paper industry in Játiva and supported it by forbidding the making of paper by Muslims elsewhere in the kingdom of Valencia. Continuity in other crafts was achieved through less formal mechanisms: Muslim artisans would remain if there was a good market for their wares. Esparto-weaving in Murcia was in *mudéjar* hands, and the precocious development of the textile industry in Valencia may be owing in part to continued activity by Muslim weavers, imitating Andalusí-style fabrics for the Christian

market. There are frequent mentions of individual Muslim artisans in thirteenth-century Christian towns, like Mahomat, the "Moorish weaver" of Seville (1282).⁽¹⁵⁾

The similarity between industrial specifications in *hisba* manuals and the municipal ordinances of Andalusian towns, previously mentioned, indicates that a great deal of technological interchange occurred, wherever substantial numbers of Muslim artisans remained. Nevertheless, examples of displacement and loss are also characteristic. In many cases, masses of artisans departed for Granada or North Africa, and whole industrial sectors were wiped out in specific towns. (Mudéjars were free to migrate from some areas and forbidden to do so from others; the terms of capitulation agreements thus had differing technological consequences.) In Murcia, for example, Muslim weavers departed en masse, the silk industry was destroyed, and fulling mills were converted by new Christian [224] owners to rice-husking. Some Murcian potters were attracted to the developing pottery center at Manises, where they continued for generations to produce Murcian-style wares. Through a similar process, lustreware techniques associated with the destroyed workshops of Madīna al-Zahrâ' were continued by Muslim artisans in twelfth-century Calatayud, under Christian control. Groups of Muslim workers were enticed from their homes by royal or seignorial privilege and settled en masse elsewhere, to develop particular industries. Thus James I established Muslim silk weavers in Játiva (possibly to compensate for the extinction of that trade in Murcia), and the Hospitallers settled one hundred Muslim fishermen, with their fleet, on the Albufera of Valencia to develop a fishing industry.⁽¹⁶⁾

In the survey that follows, I attempt to sketch the main lines of development in specimen technologies, a discussion which must be superficial owing to the lack of monographs for most of the techniques discussed. Rather than grouping related techniques, I prefer to categorize by the process by which these technologies developed. Thus I will discuss, first, shared technologies, techniques that both cultures inherited from Roman or pre-Roman cultures. Then I will discuss bilateral movements of diffusion of the same or homologous technologies to each culture by different routes (although this primary movement need not preclude secondary waves of diffusion between Christian and Islamic cultures). Finally, technologies exhibiting clear, unilineal paths of diffusion -- typically from east to west, from al-Andalus to Christian Spain -- will be considered.

3. Shared Technologies

A variety of agrarian and industrial techniques, of Roman or pre-Roman origin, were diffused throughout the Mediterranean world in antiquity. The most obvious of these were simple and universal agricultural or building procedures retained by the Hispano-Romans and Berbers which the Arabs had learned from an earlier diffusion from Persia or had acquired in the course of conquering the Middle East.

(a) Construction with tamped earth. This is a widely diffused, simple method of building inexpensive walls by tamping down dry earth or earth mixed with aggregate and a binding agent (straw or quicklime) in a wooden mold. When one layer is completed, the mold is moved up and another layer added until the wall is complete. It is found all over the [225] Mediterranean basin, as well as in parts of northern Europe and sub-Saharan Africa, a distribution that suggests multiple invention in prehistoric times. It is typically associated

with areas where field stone is lacking (e.g., León) and where, as a result, it is used both for field walls and for house construction, or in areas where wood is in short supply (as in most of the Islamic orbit). Both Muslims and Christians used tamped earth for the construction of thick fortification walls (possibly because of the speed and convenience with which such walls could be built) and it was widely used in al-Andalus for more luxurious construction, such as palaces and mosques, because Muslim architects frequently preferred to use inexpensive wall construction which could then be disguised with ornate wood lattice or stucco work. The fact that the Romance term *tapia* passed into Arabic usage (*tabiya*) does not in this case warrant the conclusion that the technique was diffused from the Christian north to al-Andalus. The opposite assumption (made by Nicolau Primitiu) that *tapia* was an Islamic technique which, in eastern Spain, lost out to concrete construction is also unjustified. A *tapia* mixture with an aggregate and binding agent is identical to concrete, which is also poured into molds. Both cultures appear to have employed a range of simple wall-building methods, dictated by the availability of alternative sources of construction materials. When stone or wood was unavailable, *tapia* or bricks would be used. ⁽¹⁷⁾

(b) Dams. The stone, rubble, or masonry dam to divert water from a stream into a canal is the simplest hydraulic appurtenance to make and doubtless is another prehistoric invention with multiple foci. Both Muslims and Christians knew the technique, which was amply diffused throughout the Roman Empire as well as in ancient Arabia. Moreover, much damming activity in the high middle ages must have consisted in rebuilding Roman dams. It is characteristic of diversion dams that the sites, once established, tend to be permanent, their use being changed in consonance with the economic needs and technological skills of successive occupants. In the diversion dams serving the canals of the huerta of Valencia, some of which must have occupied Roman sites, the Muslims appear to have added the innovation of de-silting sluices. Otherwise, little structural differentiation can be noted. The early evidence for parallel terminology to describe these structures is a further indication of a common origin of Andalusí and Christian dams. In spite of the presence of Mozarabs in early León and Castile, diversion dams there were called *presa*. With the exception of a citation from Jaca in 1128, the Arabism [226]*azud* (from *sudd*) did not become commonly diffused in Castilian until the thirteenth century. The same is true in the east of the peninsula, where Catalan dams were called *resclosa*, and *açut* did not become common until after the conquest of Valencia. It is interesting to note that *resclosa* and *sudd* both connote closure; that their function was understood identically in both cultures cannot be doubted. Subsequent to the thirteenth century a process of semantic differentiation took place, whereby *presa* came increasingly to signify a storage dam, while the usage of *azud* meaning only diversion dam spread into regions relatively untouched by Arabic influence. Although the Romans had built storage dams in Spain, the medieval Muslims did not. This is partly due to an ecological choice: the concentration by the Arabs of irrigation farming along large rivers where storage dams were not needed. The earliest Christian storage dam built at Almansa in the fourteenth century was an arched dam, perhaps manifesting some secondary Persian influence, although by what process of transmission cannot be guessed. ⁽¹⁸⁾

(c) *Qânâts* and aqueducts. The *qânât*, or chain-well, was a Persian hydraulic technique *par excellence*. It is a method for tapping deep ground water without the use of lifting devices

by sinking a series of wells and linking them underground. The technique was widely diffused in antiquity and the Romans used *qânâts* in conjunction with aqueducts to serve urban water supply systems (a *qânât*-aqueduct system was built in Roman Lyons). A Roman *qânât* system built near Murcia was described by al-Himyarî. The Arabs vastly extended the use of *qânâts*, building one system at Crevillente, most likely for agricultural use, and others, at Madrid and Córdoba, for urban water supply. The Catalan *qânât* systems, described by Humlum, however, do not seem to have been related to Islamic activity and are more likely later constructions, based on knowledge of Roman systems in southern France. Both Muslims and Christians had difficulty keeping Roman urban water-conduction systems in working order. The idle aqueduct, whose arches were used as walls for dwellings in the tenth-century Barcelona suburb called Archs Antichs, was a mute testimony to the loss of Roman technological expertise. Nevertheless, with the passage of time, Roman aqueducts were restored and new ones built. The Almohads restored the Roman water system of Seville and an aqueduct was built at Santiago de Compostela in the early twelfth century to supply the cathedral with water. Such constructions or reconstructions did not require any new technologies, and the Roman techniques were [227] perfectly well-known and generally observable in the structures still standing throughout the peninsula. Just as the Romans had conjoined *qânâts* and aqueducts, the Muslims were able to link together different hydraulic appurtenances to form viable supply systems. Thus at Córdoba a mammoth zig-zag dam which powered a number of mills featured a *noria* at one end which raised and deposited water into an aqueduct which transported river water into the city.⁽¹⁹⁾

(d) The balanced bucket or swape. This simple hydraulic device whereby one man could scoop water from a canal or well by manipulating a counter-balanced bucket at the end of a pole was probably an ancient Egyptian invention and was known throughout the Roman Mediterranean. Isidore of Seville alluded to the use of the *ciconia* ("stork") in the seventh century and both Muslims and Christians used the device contemporaneously in the high middle ages. In Murcia the device was called *alhatara* (from *khattâra*, the up-and-down waving motion of a camel's tail), rather than the more common Arabic term *shadûf*, and lands in the huerta irrigated with it are so identified in the Repartimiento. In Castile the *cigoñal* was used typically in the salt-extracting industry to lift water from cisterns onto evaporation flats.⁽²⁰⁾

(e) The Roman plow. The scratch plow, the universal plow of Mediterranean antiquity, consisted of a hardwood share-beam, attached to the ox-yoke by a yoke-beam and guided by a stilt which controlled the tilling of the furrow. Medieval documentation is scant; generally only those plows with iron shares, share-caps, or coulter were considered valuable enough to list in an inventory of possessions. Therefore the very lack of documentation is indicative of the persistence of the Roman plow. In Christian Spain, only the wealthy could afford iron fittings; the poor tempered their shares with fire to make them more durable. There may have been some wheeled, heavy plows in humid areas of the north (Catalonia, Galicia) as early as the eleventh century, but the evidence is inferential. Ethnographic mapping of contemporary plows has demonstrated complex patterns of regional variations upon the basic model and has permitted the identification of the Berber plow of northern Morocco, fitted with two small mouldboards, with areas of Berber settlement in southern Spain (southeast Granada, the south of Córdoba province,

and points in Jaén and Málaga), indicative of the Roman imprint of this technology common to ancient Hispania and Mauretania.⁽²¹⁾

(f) Surveying. Surveying techniques in Islamic and Christian Spain [228] alike appear to have been practical, minimal, and generally simplified versions of Roman practice. Ibn Bassâl describes a simple triangular level with a plumb line, bearing the unusual, Romance-sounding name, *murjiqâl*. Arabic terms (from the roots '*adala* and *wazana*') conveying the meaning of "correcting the land," the surveying procedure necessary to prepare a parcel for irrigation, have the sense of the Latin expression *librare terram* (to balance or equalize the land) and must therefore represent a procedure of Roman agriculture common throughout the Empire. On the other hand, coexisting with homely procedures of Roman inspiration was the practice of triangulation, unknown to Roman *agrimensores* and introduced from the East in the astrolabic treatises of the Andalusí astronomers Maslama of Madrid and ibn al-Saffâr. (In addition, an Umayyad official of the tenth century, Ahmad ibn Nasr, wrote a formal description of surveying practices.) Generally, when astrolabic literature was translated into Latin, geodesic uses of the instrument were omitted and Christian surveying treatises on the whole remained within the Roman tradition. An exception is the tenth-century *Geometria incertiauctoris*, a compilation of of Hispano-Arabic inspiration which Millás Vallicrosa relates to the Arabized scientific corpus of the Monastery of Ripoll. *The Geometria* details a variety of triangulation procedures that can be effected with the astrolabe, including the measuring of height and distance by right-angled triangles and squares. Therefore, alongside Roman surveying procedures, simple triangulation was practiced with an alidade -- a rule with sights at either end -- in both Islamic and Christian Spain. Simplified Roman procedures appear to have been used by individual farmers, while triangulation was associated with institutions that commanded the services of professional surveyors (such as the Monastery of Ripoll, which was acquiring huge donations of land during the tenth century). In the course of *repartimiento*, parcel boundaries were simply measured with a cord (*soga*) along a straight boundary such as a road or canal (the basic Roman agrimensorial procedure). But when the boundary was not clear, triangulation was resorted to. Large-scale or difficult surveys were carried out by specialists in land measurement (the *muhandis* in al-Andalus, the *soguejador* in eastern Spain) and in the surveying, more specialized, of irrigation canals. The *livelladors* (revelers) of medieval Valencia seem not to have practiced land surveys at all, but were master masons, specially trained for the building and repair of canals. In the later middle ages, after the diffusion of Profeit ibn Tibbon's astrolabe [229] rule with trigonometric functions (ca. 1290), triangulation must have become a more common procedure.⁽²²⁾

(g) Cork-soled shoes. The Andalusí Muslims fell heir to a number of oak-based industries developed by the Romans, including the making of cork-soled shoes. Under Islamic aegis, the technique was intensified and diversified, and the cork-soled shoe became universal in the country and a staple of the export trade. The Muslims made of the Romance *corco* (Latin, *quercus*) an Arabic root, *q-r-q*. The shoe was designated *qurq* (plural, *aqrâq*), which subsequently returned to Castilian in the form *alcorque*. The artisan who made the product was a *qarrâq*, as in the case of one 'Abd Allâh, sandal-maker of Seville a Sufi mystic mentioned by ibn 'Arabî. There was a quarter of *qarrâqin* (Caraquín) in Granada and another so named in an oak district near Madrid. Both the word and the technique diffused from al-Andalus across North Africa, where it was identified as an Andalusí

technique. Al-Saqatî and ibn 'Abdûn provide detailed specifications concerning the making of cork-soled shoes, notably that the leather stitched to the back should not be skimpy, and that leather should be sewn to leather with no filler inserted in between (some shoemakers inserted sand below the heel to make it higher, causing it to break when worn). The ordinances of Christian Málaga, Saqatî's town, contain analogous stipulations. Oliver Asín cites this case as an example of the absorption and reelaboration in vulgar Arabic of the Ibero-Latin lexicon and the reincorporation of these elaborations into Castilian. This linguistic process is an apt model for the techniques described by the terminology as well: a relatively simple Roman folk technique was adapted to the mass market demand of urban Muslims and, in response to this, diversified and complexified. The more sophisticated styles and methods were then adopted by Christians after the conquest of al-Andalus.⁽²³⁾

Numerous other techniques merit discussion under the rubric of shared technologies, were there but documentation. The Catalan smelting furnace was the same used by the Romans in the Rio Tinto mines and therefore, one can assume, the Andalusis fell heir to the same technique.⁽²⁴⁾ A similar continuity with antiquity is found in the procedures for pressing olives and grapes: the two techniques were virtually identical and both were Roman in provenance. Because of the location of the olive oil industry wholly within al-Andalus for several centuries, the terminology is heavily Arabized: *almazara* (from *mi'sara*), olive press; *alfarje* (*farsh*), lower grinding stone (in both olive and grape mills); *algorin* (from *hury*, [230] granary), holding platform for olives; and the terms for olive-oil can, both in Castilian (*alcuza*, from *kuza* jug) and in Catalan (*setrill*, from *zait*, olive oil). But there is no reason to suspect that the *almazara* differed in any significant way from the *torcularium* (*trujal*, in Castilian), a term which appears in Christian documentation to describe both the grape and olive press.⁽²⁵⁾

4. Bilateral Diffusion

Other techniques appear to have been introduced in the middle ages by twin currents of diffusion, describing a pincher movement, whereby eastern techniques reached al-Andalus through the Islamic orbit and Christian Spain through Europe. In each case the sequence of diffusion is difficult to verify, as is the level of interpenetration of currents between the two Iberian zones.

(a) The water mill. The development of the water-driven mill is the thorniest problem in medieval technology, although probably the best studied (in the European literature; there is no systematic study of mills in the Islamic world).

Water mills are of two types: the non-geared horizontal mill, powered by a horizontal wheel with paddles (the ancestor of the turbine), connected directly to the bedstone by a shaft; and the vertical mill (either overshot or undershot), whose motive force is transmitted to the stone by a gearing mechanism. The two types of mills probably bear no genetic relation to each other. According to Joseph Needham, the horizontal mill is a downward extension of the hand quern, while the vertical seems related to the *norîa*, or hydraulic wheel.⁽²⁶⁾ In medieval times, grain mills were typically horizontal, industrial mills vertical. However, because of the frequency of vertical mills in industrial towns, urban grain mills may also have been vertical, while in al-Andalus, because of the universality of

the *noria* (see below) and because of the association of irrigation agriculture with town huertas, there may well have been a relatively high incidence of vertical gristmills.⁽²⁷⁾

The tendency for terms describing analogous instruments or components to become synonymous or interchangeable makes interpretation of documents difficult. In the Christian kingdoms all mills were called *molendinum* (Castilian, *molino*; Catalan, *molí*), whether horizontal or vertical. Thus the simple listing of a mill as an appurtenance in a [231] property transaction gives no indication of what kind of mill it was. If an agricultural parcel, the mill is assumed to be horizontal. Whenever the paddlewheel is mentioned (Castilian, *rodezno*; Catalan, *rodet*), it must refer to a horizontal mill. When individual millstones are differentiated according to use, as in a customs tariff from thirteenth-century Sahagún, wherein a distinction is made between *muela de molino* (the assumption being that a *molino*, unless otherwise qualified, was a gristmill) and a *muela de ferrero* (smith), one can assume that the stones were destined to different kinds of machines, in this case, a horizontal gristmill and vertical, water-driven forge.⁽²⁸⁾ In Castile-León, a vertical gristmill was designated by the Arabism *azenia*, from *sāniya*, the generic name for a vertical waterwheel. Thus Ramiro II donated three *azenias* in Zamora (in the suburb of Olivares, and thus they may have been olive-oil mills) in 945, and six years later Ordoño II donated another, also of the Duero River near Zamora. The semantic differentiation which applied the Arabism to vertical mills is supported in the *Libro de Alexandre*, which describes fulling mills, always vertical, as *açenas que las dizen traperas*.⁽²⁹⁾ After the tenth century, fulling mills were generally called *molinos traperos*, suggesting that the earliest vertical mills in Castile and León were introduced from al-Andalus, and were undershot mills powered by rivers with strong currents.

The horizontal mill was known in Christian Spain from as early as A.D. 800, the vertical mill probably not until the mid-tenth century. Subsequently, there may have been a progressive displacement of horizontal by more efficient vertical mills, especially as more mills were built by relatively large collectivities of peasants and particularly as they came increasingly under seignorial domain. Horizontal mills were inexpensive to build and simple to maintain, inasmuch as they could be made without recourse to iron. The millstone in the Sahagún customs list cost three pence and would have lasted about four years, if a bedstone, three if a runner; a *rodezno* cited in the tariff likewise cost three pence. It is scarcely credible that ten or twelve peasants would have joined together to build a mill which required such small expenditures; more likely, these small companies were building vertical gristmills. Nevertheless, the horizontal mill, because it was economical to build and maintain, must have predominated throughout the Middle Ages. A Calle de Rodezneros (paddlewheel-makers) in twelfth-century León attests to broad participation in this enterprise.⁽³⁰⁾

[232] In the northwest of Catalonia horizontal mills were widespread by mid-tenth century. They were typically located on mountain streams of small volume with small debits and fashioned by local artisans from granite stones and pine shafts. The ridges of the stones were dressed periodically by sharpening them with carbon. On the plain of Barcelona, because of irregularity of flow, mills were built at some distance from the water course on a canal (*rego*) into which water was diverted from a dyke (*resclausa*).⁽³¹⁾

Archeological research cannot be expected to yield much information on the replacement of horizontal by vertical mills, inasmuch as the same diversion sites would have been used and the new mill constructed on the site of the old. It was fairly common for mills to fall into desuetude and laws provided for the reoccupation of such emplacements. The Fuero of Jaca (thirteenth-century redaction) stipulates that if a man finds an old mill and the stone still moves "through the force of the water that runs below it" (a horizontal mill is probably implied) he may begin milling, after which no valid claim for recovery of the mill could be lodged against him.⁽³²⁾

In al-Andalus, mills were likewise known by a universal term: *raha* (plural, *arhâ'*), which applied to all kinds of water mills, as well as to windmills and hand querns. Therefore, casual citations are impossible to identify with precision. A gristmill moved by animal power was denominated *tahûna*; however, the Arabism *atahona* or *atafona*, which is documented in Castilian in the thirteenth century, was applied both to windmills and watermills. *Raha* is also reflected in peninsular Romance, in toponyms such as Rafelbunyol (mill of the bath, Valencia) and Realage (*riha al-hajj*, mill of the pilgrim, Seville). There was also a competing Latinism, *farnat* (from *farinarius*, flour mill), recalled in the name of a Malagan village Alfarnate, where there were numerous gristmills. The presence of the Latinism in Andalusi Arabic is probably indicative of the survival of simple horizontal mills.⁽³³⁾

The spatial disposition of gristmills both in Islamic and Christian Spain follows the typical southern European pattern of the massing of small mills on natural watercourses or irrigation canals. Thus the previously cited place-name, *al-farnât*, derived from the Latin plural, had the sense of a collectivity of mills, as did the Field of the Mills (*fahs al-rahî*) near Córdoba. Another place to the west of Córdoba, Munyat Nasr, was the location of an unspecified number of henna mills (*arha' al-hinna*). In [233] Christian Spain the occurrence of such expressions as *ribulo molendinis* is indicative of the emplacement of a number of mills along a watercourse. There is no certainty, particularly in al-Andalus, that multiple mills on the same course were horizontal. Henna mills must have been vertical, and it was a common pattern to place overshot and undershot mills in sequence, so that the latter could take advantage of the head needed to operate the former. Such sequences must have been found in the Barcelona region, where a variety of types of industrial mills were built along the same course. In addition, Andalusi engineers used river dams to increase the efficiency of horizontal or undershot vertical mills, as at Córdoba, where four mills were emplaced on the downstream zig-zags of the dam across the Guadalquivir.⁽³⁴⁾

The notoriety and economic importance of watermills, as Marc Bloch indicated, has tended to obscure the persistence of hand querns. Hand querns were not only a recourse of the poor to avoid seignorial monopolies, but they were carried by armies and merchants and, in the Islamic world, were a commonplace in nomadic camping grounds. This would seem to be the most plausible explanation of a reference in the *Poema de Fernán González* to Berber warriors carrying "ovens and mills" (*sus fornos y molinos*) on their camels. The mill must have been a hand quern for grinding bread flour which could then be baked in small, jug-like, earthenware ovens (*tanûr*).⁽³⁵⁾

Industrial mills appeared in Christian Spain, notably in Catalonia, during the twelfth century, the period of expansion of milling technology throughout western Europe. As such, it is difficult to state with precision whether the Catalan mills were inspired by European or Andalusí models. The prototype of the common tilt-hammer fulling mill was the Chinese rice-husking mill, which was vertical and undershot. Assuming that this mill diffused to al-Andalus along with the cultivation of rice, it is logical that its use should have been applied there to other industries and have diffused northward. If so, then I may be right in guessing that Ramiro's *azenias* on the Duero were undershot vertical mills. There are frequent citations of fulling mills (*molendino drapario* or *trapero*) throughout Catalonia from 1150 on, during an epoch when fulling was still being done (as witnessed by regulations in the Fuero of Cuenca) in the Roman fashion, by trampling the cloth by foot. Towards the end of the century, the technology was applied to the mechanization of Catalan forges, a precocious development relative to the rest of western Europe. Paper mills [234] also appear in Catalan documentation during the 1150's and, although there is no hard evidence that the mills themselves were of Islamic inspiration, there is no reason to doubt they were not, inasmuch as the rest of the technology of paper-making (see below) was identical with Andalusí techniques.⁽³⁶⁾

The windmill may also be an example of bilateral diffusion, with those of La Mancha related to European types and those of the Balearics and other sites dependent upon an Islamic tradition. The application of the Arabism *atahona* to the windmill is not in itself evidence enough of Islamic origin. In any case, the windmill appears on the scene rather late, in the thirteenth century, the same period as it reached China from a Central Asian hearth.⁽³⁷⁾

(b) Harnessing. The received view is that the three-component Chinese equine work harness, consisting of shafts, a curved wood crossbar to hold the shafts together, and a padded collar must have reached Merovingian Europe through Central Asia. Indeed, a Chinese type, with characteristic cords linking the ends of the crossbar, is still in use in southern Spain, where Needham observed examples on a field trip in 1960. But Needham hesitates to claim an Islamic diffusion since analogous styles of harnessing reached northern Europe independent of the Islamic world. Richard Bulliet proposes a complex, bilateral model of diffusion whereby the horse collar was diffused into northern Europe across Central Asia and the breast strap from Tunisia, which in Roman times had been a particularly fecund source of technological innovation (the breast or withers strap, the whippletree, and single-animal harnessing). In Bulliet's view, then, modern harnessing (except for the padded collar) reached Europe from the south, as Tripolitanian techniques were diffused through Spain and Italy. Judging by harnessing terminology, Bulliet includes Spain within a Mediterranean technological sphere, including North Africa, Italy, and the Western Mediterranean islands, in contrast to a sharply distinct French-Provençal terminological sphere. Elements of the riding harness, which is ancient and classical, are described in Castilian with Arabisms. Examples are the crupper, *atahorra* (*al-thafara*) and *jâquima*, the bridle, from Arabic *shakîma*, yielding hackamore in English. Here, the development of the military uses of the horse by the Arabs and the common exporting of leather tack from al-Andalus to Christian Spain may have colored the terminology.⁽³⁸⁾

(c) Military technology. That styles of horsemanship diffused both [235] from east to west (as in riding *a la jineta* -- after the Zanâta Berbers with short stirrups) and in the opposite direction as well is generally appreciated. The stirrup itself seems to have diffused from Christian Europe into al-Andalus. Christian and Muslim warriors used a mixture of North African and Frankish combat styles, depending on the weapons used. The armies of al-Hakam II used both Christian (*afranji*), Arab, or Berber (*'idwî*) swords; bows of Arab (long) or Frankish (cross) style; javelins of Christian origin. A common type of Andalusí helmet was the *tashtîna* from Latin *testa*, while in Castilian the mail colf worn under the helmet was denoted by the Arabism *almófar* (*maghfâr*) -- an apt example of the complex interpenetration of military styles. Christians adopted the standard Muslim cowhide shield, *adarga* (*darqa*).⁽³⁹⁾

5. Flow of Techniques from East to West

By far the most common pattern of technological diffusion in medieval Iberia was the reception of elements of Eastern culture in Christian Spain through the mediation of al-Andalus. Within the context of this general movement, a number of distinctive processes can be discerned. Although there were cases of the implantation of elements (including technological ones) of Eastern culture in al-Andalus through the concerted action of formal institutions and policies (e.g., cultural Syrianization under 'Abd al-Rahmân I; importation of 'Abbâsîd styles of Persian inspiration under 'Abd al-Rahmân II), most technological innovations were diffused by non-formal mechanisms (involving such agents as merchants, artisans, scholars, books) and were generally in response to market demand. Typically, a style (of weaving, glazing, etc.) will diffuse first, promoting the importation of the desired product from its place of original manufacture. As demand increases, local imitation of the product will be motivated, requiring the importation of the techniques or apparatus necessary to produce the product in question. The same processes apply to the diffusion of techniques from al-Andalus to Christian Spain. The Islamic towns served the Christians as a vast emporium; when they disappeared, products had to be purchased from more distant places in the Islamic world or else produced at home, by a process of imitation. Processes of diffusion seem to have been largely non-formal, but royal direction was applied in the case of certain basic industries.

(a) The *noria* or hydraulic wheel. Although *norias* exist in copious [236] variety, two principal types were utilized in medieval Spain. The first was an ungeared wheel, compartmented or with a rim of pots, moved by the force of the water alone, which lifted water from large rivers or canals. These wheels, although mechanically simple, were typically very large in size and were associated with public works such as dams, royal gardens, or major irrigation installations, indicative of their dependence on adequate financing for construction and maintenance. In this category were the great *noria* of Islamic Toledo, driven by water from an aqueduct over the Tajo River, and the wheel at La Rora, Murcia, driven by the current of Aljufia canal. When placed on a river or canal the current-driven wheel lessens susceptibility to water shortages owing to fluctuations in the level of the channel.⁽⁴⁰⁾

The second wheel, the short-shafted, geared wheel moved by animal power, was ubiquitous. This made it possible to irrigate individual plots with well water, and the

cultivated belts around many Andalusí (and later Christian) towns owed their prosperity to its introduction. This modest device is constructed from around two hundred separate parts, all of them wood, and so could be kept in repair by the farmer himself or a local carpenter. The animal, usually a donkey, is hitched to a shaft which moves a horizontal lantern wheel which engages teeth set in a vertical [237] wheel which, in turn, raises the water by means of an endless chain of pots affixed to its rim with a continuous rope. The Andalusí aeronomical writers mention this *noria* and suggest practical measures whereby the farmer can enhance the efficiency and longevity of his machine. Thus Abu'l-Khayr and ibn al-'Awwâm recommend the use of hardwoods (such as olive), most likely for the teeth of the potgarland wheel, inasmuch as softwoods were usually employed for the lantern wheel. Abu'l-Khayr prescribes the arrangement of five pots to every cubit of rope, while ibn al-'Awwâm recommended that the pots be supplied with an air vent to prevent breakage as the force of the water pushed each pot against the wall of the well or into the pot behind it. Ibn al-'Awwâm also noted that the longer the shaft, the less force required of the animal to move the wheel; the track diameter could vary from five to seven meters depending on the force required.⁽⁴¹⁾ Besides their agricultural uses, *norias* seem also to have associated with royal parks. 'Abd al-Rahmân III's favorite residence as a young man was a park outside Córdoba, known as *munyat al-nâ'ûra* (estate of the *norias*). In Toledo, al-Ma'mûn's garden had a pavilion similarly called *majlis al-nâ'ûra*, which raised water from the Tajo to supply elegant fountains in which lions spouted water. In the palace of al-Mu'tamid of Seville, an elephant fountain was likewise supplied by a wheel, described as a *dawlab*, a synonym which usually connoted an animal-driven wheel. Al-Hakam II installed a *noria* to supply the cisterns of the mosque of Córdoba. Animal-driven wheels were used in conjunction with canals, not only wells, and wheels mentioned in a literary document cannot be identified with precision. Numerous thirteenth-century documents, for example, the *Repartimientos* of Murcia and Valencia, refer to wheels drawing water from canals. Christian documents of this era use the terms *noria* and *aceña* (from *sâni'ya*, originally a long-shafted, geared wheel) interchangeably.⁽⁴²⁾

The Andalusí *noria* is unrelated to the typical Berber *noria* of North Africa. Both the wheel itself and the pots seem related to Syrian prototypes, according to comparative ethnological research carried out by Thorkild Schiøler. Thus, like so many other elements of hydraulic agriculture, the Andalusí *noria* must be regarded as Syrian in inspiration, probably introduced as one element of the Syrianization of the landscape in early Umayyad times. The intensity of its presence in al-Andalus established a secondary focus for the diffusion of the technique. Andalusis introduced the Syrian-style wheel in Morocco and the Christians acquired [238] the technique through the migration of Mozarab farmers and, later, by conquest. In the later middle ages the *sènia* (from *sâniya*, but, as mentioned before a short-shafted, animal-driven wheel) diffused northward from Valencia and Tortosa and became widespread in Catalonia proper.⁽⁴³⁾

Because of its universality, the *noria* became the model and point of reference for all geared machines. This was true in the Islamic East, where al-Jazarî, a thirteenth-century technological writer, tinkered with fanciful machines which were, in effect, parodies of *norias*: one pictured a fake ox which appeared to provide a wheel with motive force which was in fact supplied by a hidden current of water. The same was true in the West. In a treatise on clocks prepared for Alfonso the Wise, Isaac ibn Sîd first describes the

construction of a main wheel, by fashioning four arms to be assembled in the form of a cross, "just like norias are made." The equalizing and bell wheels are then to be constructed in the manner of an *aceña*, the paradigm of a dentate wheel.⁽⁴⁴⁾ For similar reasons, the *noria* pot (*qâdûs*) came to be the universal pot (see below).

(b) Deep wells. Experience with *qânâts* seems to have exercised an undeniable influence of well-digging, the mastery of which was a prerequisite to the diffusion of the *noria*. The Andalusí aeronomical writers provide practical advice on well-digging. Ibn al-'Awwâm notes that the volume of well water can be doubled by digging four wells in the same vein, adjacent to each other in stepped depths, with the last three, progressively shallower wells, providing additional water to the main well -- a kind of miniature *qânât* system. Ibn Bassâl advises the emplacement of wells near to rivers so that water continuously filters in and the level remains constant. If not, the water will fall below the level at which the *noria*'s chain of pots can reach it. Moreover, wells should be dug in August, when the flow of water is most sluggish. For deep wells, Ibn Bassâl recommends a counterbalance device which had the advantage over the *noria*, for that would have required a chain of pots of excessive length. It is possible that deep-drilling techniques also had an Islamic diffusion, to judge by the interval between its mention by al-Bîrûnî, writing in Damascus in the early eleventh century, and its first European documentation, at Artois in 1176.⁽⁴⁵⁾

(c) Pottery. The early history of pottery techniques in the Iberian peninsula cannot be described with any certainty. The Romans introduced the use of the kick-wheel throughout Europe, but its universality cannot be assumed. What is likely is the simultaneous practice of a variety of techniques, from hand-building, to the use of a turntable without the [239] application of centrifugal force, to the kick wheel. Nor is ethnographic evidence of contemporary folk pottery historically unequivocal, since pottery techniques do not necessarily stabilize at the most advanced technological level; rather, there is frequently a tendency towards regression from the kick wheel to a turntable or hand-building, if market demand declines or if urban styles cease to dominate the rural market. Medieval Christian documentation distinguished between the *ollero* (the potter who used a wheel) and other ceramic workers, who worked with molds.⁽⁴⁶⁾

Medieval unglazed pottery falls broadly within three categories, according to archeological evidence studied by Juan Zozaya. South of the central cordillera, there was a Berber type, with red or brown vertical stripes on a whitish buff, with characteristic sharp undulations caused by the action of the wheel, resembling northern Moroccan pots. To the north of the central range is found a Germanic type with thin stripes and round undulations; it appears in the Duero Valley *before* Alfonso I's repopulation of the Tierra del Campo. Finally, there was a primitive northern ware with no slip, found in Asturias.⁽⁴⁷⁾ Non-archeological evidence provides some indication that eastern Islamic styles also affected the form of unglazed ware. It suffices to mention that because of the widespread diffusion of the *noria*, its pot, the *qâdûs*, became the universal unglazed pot in al-Andalus and it must have been the mainstay of the rural pottery industry until relatively recent times, when tin replaced earthenware. The most representative pot, with a waisted middle and a knob on the bottom to facilitate the lashing of the pot to the *noria* rope, is related to Syrian prototypes. Just as common were flat-bottomed vessels with a hole in the bottom. This latter was an all-purpose vessel: it was used as a casserole, according to an Andalusí-Magribi cookbook of

the thirteenth century; as a flower pot, according to ibn Bassâl; and, in irrigated areas where delivery of water was timed, as an outflow clepsydra, or hanging water clock, through the vent of which water issued in a determinate time. The shape of the *qâdûs*, bell-like, even lent its name to a flower, the *qâdûsî* narcissus. ⁽⁴⁸⁾

The diffusion of glazed wares, introduced from the East by the Arabs, can be traced with greater precision, owing to the chemical specificity of glaze recipes. Thus we know that blue glaze of cobalt oxide was introduced from the East to Málaga during the Taifa period, whence it was diffused to Murcia and then to Christian Spain, to Valencia (beginning of the fourteenth century) and Barcelona (at the end of the century). Also of eastern, specifically Persian provenance, were tin enamel glazes, [240] producing an opaque white, used by Malagan and Mallorcan potters of the eleventh century. The most commented glazed pottery was that called lustreware, with golden metallic glaze on a white ground, a Persian style known in Spain from at least the twelfth century, when Idrisî mentions its production in Christian Calatayud. Persian lustreware potters fled to Málaga in the late thirteenth century, fleeing the Mongols, and it is probable that they chose this destination because of its reputation as a lustreware center. In the later middle ages, lustreware (called *malica*, after Málaga) was produced by Muslim potters at Manises. ⁽⁴⁹⁾

The introduction of Persian glazes meant that Persian kilns would also have to be imported. Indeed, both lustre kilns (which were small updraft kilns) and the larger, standard, high-vaulted updraft kiln were of Persian inspiration. The Persian kiln became the standard Spanish kiln; this is the *horno árabe*, still used by traditional earthenware potters today. The firing chamber is located above the hearth, from which it is separated by a perforated floor. Besides ethnographic evidence, there is scant documentary material regarding medieval kilns. The foundation of an Andalusî kiln has been excavated in Almería, and there are citations of kilns in medieval Christian documentation. These latter are so vague that it is impossible to tell what they might represent (e.g., a *furnum antiquum in Ardón*, 952; *furnum de cantaria in Lérida*, 1193). Some clues regarding kilns may be forthcoming from medieval chemical lore. Interestingly, temperatures requisite for common alchemical operations were indicated in recipes by specifying the kind of oven needed. Thus for slow-heating operations, the low-temperature *tanûr* (medieval Castilian or Latin *athanor*, *actanor*) was used; the next lowest, according to Gerard of Cremona's twelfth-century translation of *De aluminibus et salibus* attributed to al-Râzî, but with obvious Andalusî interpolations, was the *furnum panis*, the baker's oven; then, the potter's furnace (*furnum figuli*); and finally the glassmaker's oven (*furnum vitrearîi* or *fusionis*). The diffusion of certain kinds of eastern kilns may well have been encouraged by the spread of apposite chemical processes. ⁽⁵⁰⁾

In the wake of the Christian conquest, the northward migration of Muslim potters, particularly from Murcia, was common. The potters (*moros olleros*) were the recipients of a privilege allowing them to dig clay in the thirteenth century; their position declined, and many migrated to Manises in the following century. It will be noted that the process of the westward diffusion of glazed pottery was quite slow, [241] especially the adoption of the technique by Spanish Christians. ⁽⁵¹⁾ This is doubtless explained by the function of al-Andalus as an emporium: so long as Christians could import the wares, they did not produce them at home. The techniques were transferred only upon conquest of towns,

where they were being practiced by resident Muslim craftsmen who, subsequent to the conquest, became very mobile and diffused glazing throughout the Christian kingdoms.

(d) Glass. Glass-making is a good example of a technique imported into al-Andalus in its Chinese form, essentially unchanged. Throughout the Islamic world, glass was either cut from crystal or blown in molds. The technique of cutting crystal was said to have been introduced in al-Andalus by 'Abbâs ibn Firnas, poet and astrologer in the courts of 'Abd al-Rahmân II and Muhammad I. ('Abbâs had other technological interests: he built a clock, a planetarium, and an armillary sphere, and made an unsuccessful attempt to fly by donning a feather-covered silk suit.)⁽⁵²⁾

Glass vessels were blown in Islamic Almería, Málaga, and Murcia, doubtless in imitation of eastern wares, such as the *irakes* -- glass goblets -- so favored on the noble tables of tenth-century León. It is known that Islamic styles, and therefore presumably Islamic techniques, were imitated by Catalan glassmakers, who must, however, also have had access to western European styles and techniques as well. In 1189 the monastery of Poblet granted to the glassblower Guillem the right to gather glasswort in return for tithe and two hundred pounds of sheet glass paid annually. (The site of these glassworks, at Narola, was excavated in 1935.) In the later middle ages there is ample documentation indicative of a flourishing glass industry in Barcelona (where glass furnaces were regarded as a fire hazard as early as 1324) and other Catalan towns. It is in the fourteenth century that imitation of eastern styles becomes explicit, e.g., frequent citations of "glass of Damascus" (referring to Syrian, or Syrian-style, enamelled glass), or a 1396 citation of a rose-water sprinkler (called by an Arabism, *almorratxa*, from *mirashsha*, watering can) "of blue glass decorated with the work of Damascus." In 1387, the council of Tortosa ordered the purchase of a glass lamp, either made in Damascus or an imitation thereof. Formulas of eastern inspiration designed to strengthen or to color glass also circulated: several are given in the *Lapidario* of Alfonso X.⁽⁵³⁾

(e) Paper. Paper, one of a number of Chinese techniques whose westward passage was eased by the inclusion of Turkestan within the Islamic [242] orbit, was known in al-Andalus by the mid-tenth century, as evidenced by the appearance around this time of the surname al-Warrâq, "the papermaker." Because it was a completely new technique without local precedent, it was able to break with the pattern of traditional craft organization and was typically mass-produced in large water-powered mills. The scale of production was a response to the burgeoning of Islamic scholarship with which the diffusion of this technique coincided.⁽⁵⁴⁾

When Andalusí scholars went east, they made copies of books on paper and then, upon returning home, transferred their drafts to parchment, which was thought more durable. Early papermakers thus attempted to imitate parchment (thus it is called "rag parchment"-- *pergamino de paño* --in the *Siete Partidas*), an effect achieved by sizing it with wheat starch, a Persian innovation which rendered the paper's surface more suitable for writing with ink. Other sizings were also used: the *Lapidario* of Alfonso the Wise recommends a substance called *omna* to make the paper whiter and glossier. In the Islamic West paper was made from flax fibers (generally in the form of old cloth scraps), which were soaked in quicklime, washed, pounded, and dried in molds. In Christian Spain, the gathering of rags

for the paper industry was a profession in itself, as evidenced by a grant by the King of Aragón in 1287, empowering two citizens of Menorca to search for cloth scraps with which to make paper.⁽⁵⁵⁾

The paper-making center of al-Andalus was Játiva, which produced a distinctive product still known as *shâtibî* in Morocco. It is assumed, but not proved, that the water-driven mill was used in Islamic Játiva; documentation shows Muslims of Játiva operating a paper mill (*almerxampapiri*; note the Arabism, from *mi'sara*, "press"). Since the texture and composition of the oldest surviving specimens of medieval Catalan paper are identical to the Andalusí product, the techniques of paper making in both societies can be presumed to have been identical. References to paper mills abound in Catalan documents of the twelfth century, and, by the thirteenth, paper was exported to Sicily from both Barcelona and Valencia. The Valencian exports doubtless originated in Játiva, where the Muslim community received royal support for the continued production of paper; not only were the Muslims of Játiva granted a virtual monopoly in the kingdom of Valencia, but a prohibition against Valencian Muslims producing paper anywhere but in Játiva probably is indicative of the deliberate concentration of that industry there.⁽⁵⁶⁾

(f) Textiles. Of the various medieval textile technologies, that of silk [243] weaving is best documented. Because of the regional specialization typical of medieval craft organization and the demand in international commerce for high-quality silken cloth, this industry was characterized by a relatively high degree of diffusion and imitation of styles and techniques. Certain wares, such as *tirâz* (silken cloth embroidered with lettering), were so stylized that the paths of their diffusion were noted by contemporaries and are therefore quite easy to trace. In al-Andalus, the production of eastern-style cloth was concentrated in the towns of Málaga and Almería, which, as ports, were the first to receive the new techniques or styles. Almería's role in this process was particularly salient in the twelfth century: "In the industry of *tirâz* and of silk there were eight hundred workshops and one thousand for excellent tunics and brocade, and as many more for ciclaton; the same for *jurjanî* and *isfahanî* cloth; the material called '*attabî*', the surprising *mi'jar* and tapestries embroidered with flowers for saddles."⁽⁵⁷⁾ *Jurjanî* and *isfahanî* refer specifically to the types of ware distinctive of the Persian cities of Jurjan and Isfahan; '*attabi*' is a silk and cotton fabric named after a quarter of Baghdad where it was originally produced. (Baghdadi wares were imitated as a matter of state policy: Andalusí emirs of the ninth century encouraged the duplication of Iraqi styles and techniques. In the early tenth century, Muhammad ibn 'Ubayd learned how to make brocade in Baghdad according to techniques which he continued to use in Córdoba. Baghdad silks were so popular that Andalusí weavers falsified the place of origin in the decorative inscriptions on the cloth.) Also imitated were *tustarî* (Persian), *dabiqî* (Egyptian), *irmînî* (Armenian), and *siqillî* (Sicilian) cloths.⁽⁵⁸⁾ *Tirâz* was typically a state monopoly and was produced by specially trained weavers in royally financed establishments (e.g., the *dâr al-tirâz* of the Umayyad emirs). According to ibn Khaldûn, the Party Kings continued the Umayyad style and diffused it to North Africa. It was also copied in Christian Spain. We have noted the settlement in León of a group of *tiraceros de rey*. Tenth-century documents refer to *tirâz*, probably imported, and later documents mention *manteles letrados*.⁽⁵⁹⁾

The diffusion of Persian-style cloth with complex geometric designs implies as well the concomitant diffusion of the Persian draw loom with enough heddles (four for the twill binding and at least four for the pattern) to produce such patterns. The *hisba* treatise of al-Saqatî provides locations for looms, regulating the minimum dimensions required for the weaving of fine silk. Similar regulations occur in the municipal [244] ordinances of Christian Seville and Toledo, indicating continuity in silk-weaving procedures.⁽⁶⁰⁾

Other weaving techniques, such as the making of esparto mats, were likewise continued by Christians in substantially the same form as developed by Andalusî Muslims.⁽⁶¹⁾

(g) Net fishing. The terminology of net fishing along the Mediterranean coasts of southern Spain is so heavily laced with Arabisms that one must assume an Islamic origin. Along with elements of navigational, shipbuilding (for example, the sternpost rudder) and other maritime technologies, fishing techniques made their way from the Red Sea and Arabian Gulf to al-Andalus as Arab mariners migrated westward or participated in maritime commerce. The drag net, *aljerife* (*jarîf*), is a common south Arabian net with two arms, operated from the shore. Other nets of apparent Arab influence or origin are the tuna trap (*almadraba*, from *madraba*); the conical net (*atarraya*, from *tarrâha*); the purse seine (*jareta*, from *sharîf*); and the pocket seine (*jabega*, from *shabbak*).⁽⁶²⁾

(h) Clocks. A variety of non-mechanical techniques and devices were used for timing irrigation water. Two of these, the sinking bowl and the outflow clepsydra, although ancient, probably had, by medieval times, come to be wholly associated with Andalusî irrigation practices. The use of both was widely diffused and quite homogeneous throughout the Andalusî-Magribî orbit.⁽⁶³⁾

In the *Libros de saber de astronomia*, Isaac ibn Sîd described five time-measuring devices, more or less of ancient provenance but filtered through the prism of Arabic science. The clocks described were (1) a sundial divided into quadrants, to be used with a table of declination of the sun; (2) the "Palace of Hours," a cupola on the interior walls of which the hours of daylight were marked by sunlight shining through a progression of windows; (3) a clepsydra, wherein water whose flow is regulated by a siphon turns an astrolabe; (4) a candle clock whose indicator is moved by a counterweight regulated by the candle; and (5) a compartmented cylindrical mercury clock (also a clepsydra). The mercury and water clocks were conceptually the most important because they had astrolabes for dials and were therefore true chronometers rather than devices which illustrated the movement of the heavenly spheres. The mercury clock was said by Isaac to have been built two hundred years before by "Iran," an anachronistic reference to Hero of Alexandria, which nonetheless indicates that the Arabs had known the principle of weight-driven [245] mechanical clocks two centuries before it was appreciated in the Latin West. This clock was a perpetual motion machine which, as the mercury flowed from compartment to compartment, rotated an astrolabe dial, set for Toledo, where Alfonso the Wise maintained his observatory, once every twenty-four hours. The clepsydra had an eleventh-century antecedent in the water clock built in Toledo by al-Zarqâl.⁽⁶⁴⁾

A host of other techniques reveal the same pattern of diffusion from east to west within the Islamic world, and thence to the Latin West. The case of sugar refining, a Chinese

factory-scale technique which diffused westward with the crop itself, is obvious, although the Christians did not acquire the technique until the early fourteenth century. Of eastern provenance also were the tanning techniques that produced a number of soft leathers: *guadameci* (after the oasis of Ghadames), which was sheepskin tawed with alum, and Cordoban, which was vegetable-tanned goatskin. These methods were developed in al-Andalus, probably on eastern or North African models, and subsequently diffused in the Christian West. A more inferential case is the snow well, a rudimentary but effective method of preserving snow for use in cooling in summertime. The similarity of snow wells in Spain and in the Islamic East, as well as the citation by Spanish authors (e.g., Monardes) of Arabic pharmacological prescriptions, including snow as an ingredient, lead to an assumption of cultural continuity.⁽⁶⁵⁾

Techniques of ivory decoration provide an example of the variegated responses to Islamic art on the frontier. The carving of has reliefs in ivory was an Islamic technique (initially of Persian inspiration) highly valued by Christian Spaniards, who prized carved ivory coffers or reliquaries as booty and as objects of trade. In the Islamic world, ivory-carving was related to the technology of gold and silver working and also to the carving of wood, which, owing to its scarcity, was treated with higher regard by Muslim artisans than by their European counterparts. Ivory was carved in various Andalusí towns, particularly Cuenca, and Mozarabs established an ivory workshop at San Millán de la Cogolla in imitation of those of Córdoba. But ivories *painted* with Arabic inscriptions also appeared in medieval Spain, ostensibly produced for the Christian market, more western than Islamic stylistically. Pinder-Wilson identifies this kind of interaction of artistic tastes as characteristic of areas on the fringe of the Islamic world.⁽⁶⁶⁾

It is clear that the tremendous flow of techniques from east to west - [246] in part a result of the international trading system of the medieval Islamic world, and in part a cause of it - was at the heart of the economic dynamism of al-Andalus and of that society's ability to remain economically viable even in the face of political disorganization at home and the pressure of enemy attack. The kinds of techniques diffused were to a great extent determined by the environmental constraints of the resource-poor Mediterranean basin, as Maurice Lombard reiterates, pointing to the probable cause of the late medieval Islamic decline.

In regard to the role of technological diffusion in Christian Spain, the processes were similar, although retarded by socio-political factors unfavorable to urbanization, on the one hand, and by the overweening dominance of Andalusí manufactures in the marketplace, on the other. Once the southern emporium was destroyed, a more normative pattern of technological diffusion was instated. Castro's argument that Spaniards have always been importers of foreign technologies, only that in the middle ages (after 1085) the "exporters" (i.e., Jews and Mudéjars) were enclaves of technological expertise geographically inside the country, but ethnically outside, is misleading.⁽⁶⁷⁾ It is true that, in an ethnically plural society, economic division of labor often follows along lines of ethnic cleavage; but such lines of cleavage do not necessarily act as barriers to technological diffusion. They may have the opposite effect.

Castro must have assumed (as does Sánchez-Albornoz) that some peoples are naturally endowed with certain technologies, and that these technologies therefore diffuse across cultural boundaries with great difficulty. That this is not the case, and that receptivity to technological innovation is governed by a variety of extrinsic social and economic factors, can be appreciated by turning the equation around and noting that in the fifteenth and sixteenth centuries Jews bore Spanish technology with them to the Balkans and, moreover, these technologies (e.g., textile weaving, glass blowing) were not identifiably "Jewish." The same is true of the Moriscos, who bore generalized technological information (e.g., firearms, New World crops) to North Africa.

In the middle ages, Jews were prominent in certain crafts (dyeing, metal working) and Mudéjars in the building trades. Both groups undoubtedly played a role in the transmission of technological elements after 1085, in the first phase of cultural adjustment subsequent to conquest, during which Christians acquired many of the trappings of the subject population. After this early phase of contact, Muslims, in particular, [247] suffered tremendous technological loss, as the most talented and successful artisans migrated and those who remained were forced into increasingly restricted roles, both economically and creatively.

Moreover, the diffusion of techniques across cultural borders is a normative process, whether those borders are political or simply define an ethnic entity. Ethnic boundaries are not hermetically sealed, any more than is the border between France and Spain. Elements were constantly being exchanged across those borders. Then too, the diffusion of Frankish techniques to Christian Spain was a process identical to that governing diffusion of techniques from the Islamic world. The identification, therefore, of Jews and Muslims as the sole repositories of technological innovation or expertise is inexact.

One could, in fact, make the case that Christians of the high middle ages had a rather high value for technological expertise, to judge by the number of technologists who were canonized. Best known is Santo Domingo de la Calzada, who built the bridge over the Oja River with a timber framework and pillars of stone, as well as constructing hostels for pilgrims and repairing roadbeds along the pilgrimage route. His disciple, San Juan de Ortega, was also a builder of roads and bridges. The patron saint of Burgos, San Adelelmo or Lesmes, was best remembered for devising a sewage system for the town by diverting water from the Pico and Vena streams (affluents of the Arlanzón) through canals which he constructed down the centers of the streets. With an adequate drop, the water carried the sewage off. These conduits were called *esquevas* and were imitated in Valladolid and other towns.⁽⁶⁸⁾

The implantation of new techniques in Christian towns of the middle ages, whether through the migration of artisans (San Adelelmo was French; the other two saints were Spanish), utilization of the skills of ethnic enclaves, or imitation of foreign wares, was a function of the growth and mobilization of indigenous Christian capital. Castro's view of a Christian economy colonized, in effect, by its own ethnic subordinates, is simply not believable.

Notes for Chapter 7

1. Needham, "Central Asia in the History of Science and Technology," p. 137; Juan Verner, "La ciencia en el Islam y Occidente," *Occidente e l'Islam nell'altomedioevo*, II: 549-550.
2. On regional specialization, see Goitein, *Studies in Islamic History*, p. 265; Lombard, *L'Islam*, p. 185. On commerce as a stimulus to the transfer of technology, Bonnassie, *La Catalogne*, I: 485. On imitation as a stimulus for technological change, see Keith Nicklin, "Stability and Innovation in Pottery Manufacture," *World Archaeology*, 3 (1971-1972), 20.
3. Goitein, *Letters of Medieval Jewish Traders*, p. 266 n. 17; Hans E. Wulff, *The Traditional Crafts of Persia* (Cambridge, Mass.: M.I.T. Press, 1966), p. 62. Goitein perhaps underestimates the training of scales-makers; a *mawâzîni* of Toledo made astrolabes in mid-eleventh century; J. M. Millás Vallicrosa, *Assaig d'història de les idees físiques i matemàtiques a la Catalunya medieval* (Barcelona: Institució Patxot, 1931), p. 69.
4. See discussion in section 2, below, and also Gual Camarena, "Para un mapa de la industria textil," p. 110.
5. On resource constraints on technology, see Lombard, *Espaces et réseaux*, p. 169, and *L'Islam*, p. 176. On Arab dependence on others for iron-forging, Bulliet, *The Camel and the Wheel*, p. 94.
6. Bertran Gille, "Technological Developments in Europe: 1100 to 1400," in *The Evolution of Science*, Guy S. Métraux and François Crouzet, eds. (New York: Mentor, 1963), p. 201.
7. Lynn White, Jr., "Cultural Climates and Technical Advance in the Middle Ages," *Viator*, 2 (1971), p. 181.
8. Foster, *Culture and Conquest*; Juan F. Riaño, *The Industrial Arts in Spain* (London: Chapman and Hall, 1879), pp. 149-151.
9. On familial adscription to trades, see Goitein, *Studies in Islamic History*, pp. 261, 269; *idem*, *Mediterranean Society*, I: 79; Horace M. Miner, "Traditional Mobility among the Weavers of Fez," *Proceedings of the American Philosophical Society*, 117 (1973), 17-36. On the French urbanistes, *ibid.*, p. 19, citing Roger Le Tourneau, *Fès avant le protectorat* (Casablanca: SMLE, 1949), p. 2, and Torres Balbás, *Ciudades hispanomusulmanas*, I: 131, citing Louis Massignon. On the conservatism of traditional artisans, see George M. Foster, "The Sociology of Pottery: Questions and Hypotheses Arising from Contemporary Mexican Work," in *Ceramics and Man*, Frederick R. Matson, ed. (Chicago: Aldine, 1965), p. 49. On the small

scale of industry, Goitein, *Mediterranean Society*, I: 80-81 (small workshop with single craftsman), whose conclusions are supported by documentary and archeological evidence in Torres Balbás, *Ciudades hispanomusulmanas*, I: 317-320 (on *operatoria*).

10. On the migration of artisans, see Karl W. Deutsch, "Medieval Unity and the Economic Conditions for an International Civilization," in *Early Medieval Society*, Thrupp, ed., p. 248; Richard Ettinghausen, "Interaction and Integration in Islamic Art," in *Unity and Variety in Muslim Civilization*, G. E. von Grunebaum, ed. (Chicago: University of Chicago Press, 1955), pp. 110, 113; Goitein, *Mediterranean Society*, I: 49, 51.

11. Lombard, *Espaces et réseaux*, p. 105; Ettinghausen, "Interaction and Integration in Islamic Art," p. 113; Luis M. Llubiá, *Cerámica medieval española*, 2nd ed. (Barcelona: Labor, 1973), p. 90; Torres Balbás, "Gibraltar, llave y guarda de España," *Al-Andalus*, 7 (1942), 174; Georges S. Colin, "L'Origine des norias de Fès," *Hespéris*, 16 (1933), 156-157; Goitein, *Studies in Islamic History*, p. 265.

12. Al-Khushanî, *Historia de los jueces de Córdoba*, Julián Ribera, ed. and trans. (Madrid: Centro de Estudios Históricos, 1914), pp. 137 (text), 169-170 (trans.). Note that the term for oven is *furn*, a Latinism, while that for tube is Arabic *unbûb*.

13. Lacarra, "Aspectos económicos de la sumisión de los reinos de Taifas," pp. 270, 273; Represa, "Genesis y evolución urbana de Zamora," p. 526; Sánchez-Albornoz, *Investigaciones y documentos*, pp. 173-174; Yáñez, *Monasterio de Santiago de León*, p. 246; Vázquez de Parga, *Peregrinaciones a Santiago*, II: 472 n. 20; González García, *Salamanca*, p. 82; Luis Rubio García, "Los documentos del Pilar (s. XII)," *VII Congreso de Historia de la Corona de Aragón*, II: 322-323; Lladonosa Pujol, "Proyección urbana de Lérida," p. 197; Agustí Altisent, "Una societat mercantil a Catalunya a darreries del segle XII," *Boletín de la Academia de Buenas Letras de Barcelona*, 32 (1967-1968), 59; Marcelin Defourneaux, *Les français en Espagne au Xle et Xlle siècles* (Paris: Presses Universitaires de France, 1944); Bonnassie, *La Catalogne*, I, 487; Gual Camarena, "Comercio de telas," p. 88.

14. Ignace Goldziher, "The Spanish Arabs and Islam," *The Muslim World*, 53 (1963), 8 n. 5.

15. Riaño, *Industrial Arts in Spain*, p. 163; Josep M. Madurell i Marimon, *El paper a les terres catalanes. Contribució a la seva història*, 2 vols. (Barcelona: Fundació Vives Casajuana, 1972), II: 968; Torres Fontes, *Repartimiento de la huerta y campo de Murcia*, p. 46; Gual Camarena, "Comercio de telas," p. 93; *idem*, "Para un mapa de la industria textil," p. 150.

16. Mobarec Asfura, "Condición jurídica de los moros," p. 42; Torres Fontes, *Los mudéjares murcianos en el siglo XIII*, p. 12; Gual Camarena, "Para un mapa de la industria textil," pp. 136, 142; Llubiá, *Cerámica medieval española*, p. 183; G. J. Osma, *Los maestros alfareros de Manises, Paterna y Valencia*, 2nd ed. (Madrid: Instituto de Valencia de D. Juan, 1923), pp. 18.21; Lombard, *L'Islam*, p. 187; Robert I. Burns, "Immigrants from Islam: The Crusaders' Use of Muslims as Settlers in Thirteenth-Century Spain," *American Historical Review*, 80 (1975), 30.

17. Thomas F. Glick, "Cob Walls Revisited: The Diffusion of Tabby Construction in the Western Mediterranean World," in Bert S. Hall and Delno C. West, eds., *On Pre-Modern Technology and Science: Studies in Honor of Lynn White, Jr.* (Los Angeles: Center for Medieval and Renaissance Studies, 1976), pp. 147-159.

18. Glick, *Irrigation and Society in Medieval Valencia*, pp. 176-177; J. A. García-Diego, "The Chapter on Weirs in the Codex of Juanelo Turriano," *Technology and Culture*, 17 (1976), 218-219; Norman Smith, *A History of Dams* (London: Peter Davies, 1971), pp. 87, 92-93, 101, 104-105, 108-109.

19. Glick, *Irrigation and Society in Medieval Valencia*, pp. 182-184; Bolens, "L'Eau et l'irrigation," p. 66; Bonnassie, *La Catalogne*, I: 465; Torres Balbás, *Ciudades hispanomusulmanas*, pp. 49, 152; Vázquez de Parga, *Peregrinaciones a Santiago*, I: 56; Smith, *History of Dams*, pp. 90-91; Oliver Asín, *Historia del nombre "Madrid."*

20. Glick, *Irrigation and Society in Medieval Valencia*, p. 178; Steiger, *Toponimia árabe de Murcia*, p. 12; Torres Fontes, *Repartimiento de la huerta y campo de Murcia*, p. 39; Moreta, *San Pedro de Cardena*, p. 77.

21. K. D. White, *Roman Farming*, pp. 174-175; Juan Martínez Ruíz, "Notas sobre el arado bereber de Beni Chicar (Marruecos)," *Revista de Dialectología y Tradiciones Populares*, 22 (1966), 323, 327-328; García de Cortázar, *San Millán de la Cogolla*, pp. 91, 269; Bonnassie, *La Catalogne*, p. 478.

22. Smith, *History of Dams*, p. 88; Torres Balbás, *Ciudades hispanomusulmanas*, 51; ibn Bassál, *Libro de agricultura*, pp. 55 (text), 61-62 (trans.); Millás Vallicrosa, "Sobre la obra de agricultura de ibn Bassál," p. 140; Bolens, "L'Eau et l'irrigation," pp. 72-73; Torres Fontes, *Repartimiento de la huerta y campo de Murcia*, p. 51; Goitein, *Mediterranean Society*, I: 113; Thomas F. Glick, "Levels and Levelers: Surveying Irrigation Canals in Medieval Valencia," *Technology and Culture*, 9 (1968), 165-180; Millás Vallicrosa, "La introducción del cuadrante con cursor en Europa," *Estudios sobre historia de la ciencia española* (Barcelona: Consejo Superior de Investigaciones Científicas, 1949), pp. 67-69; *idem*, *Assaig d'història de les idees físiques*, pp. 167-168.

23. Oliver Asín, "Quercus en la España musulmana," *passim*; ibn 'Arabî, *Sufis of Andalusia*, p. 126; Goitein, *Mediterranean Society*, I: 111, 422; Chalmers, "El 'Kitâb fî âdâb al-hisba,'" *Al-Andalus*, 33 (1968), 397-398; Lévi-Provençal, *Sevillemusulmane*, p. 133.

24. For some indications of medieval iron technology, see Gual Camarena, "El hierro en el medioevo hispano," and L. Salkield, "Ancient Slags," in *La mineria hispana e iberoamericana*, I: 93.

25. For some indications of medieval iron technology, see Gual Camarena, "El hierro en el medioevo hispano," and L. Salkield, "Ancient Slags," in *La mineria hispana e iberoamericana*, I: 93.

26. Needham, *Science and Civilisation in China*, IV, part 2: 405.

27. On rural-urban dichotomies in mill types, see John Muendel, "The Horizontal Mills of Medieval Pistoia," *Technology and Culture*, 15 (1974), 209, 213; and Louis C. Hunter, "The Living Past in the Appalachias of Europe: Water-Mills in Southern Europe," *ibid.*, 8 (1967), 455.

28. Muendel, "Horizontal Mills," pp. 200, 209; Julio González, "Aranceles del portazgo de Sahagún en el siglo XIII," *Anuario de Historia del Derecho Español*, 14 (1942-1943), 577.

29. Represa, "Genesis y evolución de la Zamora medieval," p. 526; Julio Caro Baroja, "Sobre maquinarias de tradición antigua y medieval," *Revista de Dialectología y Tradiciones Populares*, 12 (1956), 150. The term *azenia* is either found alone in Castilian documents or linked with *molendinum*. When the reference is to, e.g., *aceniis et molendinis*, there may be an implicit distinction between vertical and horizontal mills, respectively. When *azenia* appears alone, it might refer either to a vertical, undershot mill, or, conceivably, to a dual-purpose wheel driving the grindstone of a gristmill. On terminology, see Gautier-Dalché "Moulin à eau," p. 341 n. 30; on dual-purpose *norias*, see Smith, *Man and Water*, p. 142.

30. García de Cortázar, *San Millán de la Cogolla*, p. 250; Wulff, *Traditional Crafts of Persia*, p. 279 (on longevity of stones); González, "Aranceles del portazgo," pp. 577, 578; Rodríguez Fernández, *La judería de la ciudad de León*, p. 97.

31. See descriptions of Catalan horizontal mills in Jean-Pierre Cuvillier, "Les communautés rurales de la plaine de Vich (Catalogne) au XIII^e et XIV^e siècles," *Mélanges de la Casa de Velazquez*, 4 (1968), 86, and diagram in appendix III-I; and Bonnassie, *La Catalogne*, I: 461. These systems were identical to those of southern France; see Pierre Gérard and Elisabeth Magnou, eds., *Cartulaires des Templiers de Douzens* (Paris: Bibliothèque Nationale, 1965), xxix-xxxii. Note that the diagram on p. xxx is erroneous, inasmuch as it confuses the *resclausa* (diversion dam) with the *caput rego*, which is the mill's intake channel. On the dressing of millstones, see Caro Baroja, "Maquinarias de tradición antigua," p. 163.

32. *El Fuero de Jaca*, Molho, ed., pp. 49, 108, 390.

33. Lynn White, Jr., *Medieval Technology and Social Change* (Oxford: Clarendon Press, 1962), p. 161; Neuvonen, *Arabismos del español*, pp. 249-250; Jaime Oliver Asín, "El hispanoárabe al-farnât 'los molinos harineros' en la toponimia peninsular," *Al-Andalus*, 23 (1958), 456-459. Note the term *rouet arabe* describing a horizontal wheel with curved blades, in Languedoc; Smith, *Man and Water*, p. 219 n. 7.

34. Undershot wheels run on the impact, from fall, of the water, while overshot wheels are impelled by the weight of the water alone (see Smith, *Man and Water*, p. 147). On the general pattern of massing, see Hunter, "Water-Mills in Southern Europe," pp. 463-464; and Charles F. Gritzner, "Hispano Gristmills in New Mexico," *Annals of the Association of American Geographers*, 64 (1974), 516. For mills in Córdoba, Torres Balbás, *Ciudades hispanomusulmanas*, pp. 140, 142; on *ribulo molendinis*, Pallares and Portela, *Bajo valle del Miño*, p. 27. On the pairing of overshot and undershot mills, Needham, *Science and Civilization in China*, IV: 402. See also al-Saqundî, *Elogio del Islam español*, p. 108, for a reference to "inside" and "outside" mills (*arhâ' al-dâkhila w'al-khârija*), which would seem the equivalent

of the Castilian *rueda de dentro, rueda de fora* to identify whether the millwheel is within the mill house or outside; see Gautier-Dalché, "Moulin à eau," p. 347 n. 84, on the association of mills with dams and bridges, G. Menéndez Pidal, *Camino en la historia de España*, p. 65; Smith, *History of Dams*, p. 90; *idem*, *Man and Water*, p. 142.

35. Marc Bloch, "The Advent and Triumph of the Watermill," in *Land and Work in Medieval Europe* (New York: Harper and Row, 1969), pp. 149, 157-159; *Poema de Fernán González*, p. 117 (verse 383). See Wulff, *Traditional Crafts of Persia*, pp. 277 (hand querns), 292 (*tanûrs*).

36. On the fulling mill, Caro Baroja, "Maquinarias de tradición antigua," pp. 145-153; Gual Camarena, "Comercio de telas," p. 92 n. 31. On forges, Caro Baroja, *op.cit.*, p. 116, and Gille, "Technological Developments," pp. 175, 198. On paper mills, Oriol Valls i Subirà, "Característiques del paper de procedència o escola àrab," *VII Congreso de Historia de la Corona de Aragón*, III: 320; Madurell i Marimon, *Paper a terres catalanes*, II: 961-962. On river-driven undershot mills, Smith, *Man and Water*, p. 143.

37. See discussion in White, *Medieval Technology and Social Change*, p. 161 and references; Needham, *Science and Civilisation in China*, I: 245.

38. Needham, *Science and Civilisation in China*, IV, 2: 321-322; see the illustrations in Alvar, *Atlas lingüístico*, I: lámina 127. For *atahorra, ataharre*, *ibid.*, lámina 178, and Julio Fernández-Sevilla, *Formas y estructuras en el léxico agrícola andaluz* (Madrid: Consejo Superior de Investigaciones Científicas, 1975), p. 367. On the etymology of *jáquima*, J. Corominas, *Diccionario crítico etimológico de la lengua castellana*, 4 vols. (Madrid: Gredos, 1954), II: 1035. Bulliet, *The Camel and the Wheel*, pp. 197, 199, 204-205.

39. Louis Mercier, "Les écoles espagnoles dites de la Brida et de la Gineta (ou Jineta)," *Revue de Cavalerie*, 37 (1927), 301-315; G. Menéndez Pidal, *Camino en la historia de España*, p. 43; White, *Medieval Technology and Social Change*, pp. 36, 152-153; Emilio García Gómez, "Armas, banderas, tiendas de campaña, monturas y correos en los 'Anales de al-Hakam II' por Isa Razi," *Al-Andalus*, 32 (1967), 163, 165, 167; Neuvonen, *Arabismos del español*, pp. 104-105, 130-131; Riaño, *Industrial Arts in Spain*, pp. 88-89.

40. Bolens, "L'Eau et l'irrigation," p. 66; Castrillo Márquez, "Descripción de al-Andalus," p. 101; Glick, *Irrigation and Society in Medieval Valencia*, p. 178.

41. Schiøler, *Roman and Islamic Water-Lifting Wheels*, pp. 16, 79-83; Bolens, "L'Eau et l'irrigation," pp. 71-72.

42. Torres Balbás, *Ciudades hispanomusulmanas*, pp. 140, 144; Pérès, *Poésie andalouse*, pp. 204-205; Bolens, "L'Eau et l'irrigation," p. 66; Glick, *Irrigation and Society in Medieval Valencia*, p. 180.

43. Bolens, "L'Eau et l'irrigation," p. 72; Schiøler, *Roman and Islamic Water-Lifting Wheels*, pp. 169-170; Glick, *Irrigation and Society in Medieval Valencia*, p. 150; Antoni M. Alcover, *Diccionari català-valencià-balear*, 10 vols. (Palma: M. Alcover, 1930-1962), IX: 825-826 (s.v. *sènia*).

44. Ibn al-Razzâz al-Jazacî, *The Book of Knowledge of Ingenious Mechanical Devices*, Donald R. Hill, trans. (Dordrecht: Reidel, 1974), pp. 182-183; Schiøler, *Roman and Islamic Water-Lifting Wheels*, pp. 67-72; José Augusto Sánchez Pérez, *La personalidad científica y los relojes de Alfonso X el Sabio* (Murcia: Academic Alfonso X el Sabio, 1955), pp. 21-24.

45. Bolens, "L'Eau et l'irrigation," p. 71; ibn Bassâl, *Libro de agricultura*, pp. 223-226 (trans.); Needham, "Central Asia and the History of Science," p. 138.

46. On the evolutionary sequence of potting techniques, see George M. Foster, "The Potter's Wheel: An Analysis of Idea and Artifact in Invention," *Southwestern Journal of Anthropology*, 15 (1959), 99-119; on regression in technique (in Europe and North Africa), see Nicklin, "Stability and Innovation in Pottery Manufacture," p.43; for terminology in the Fuero de Teruel, Liubiá, *Cerámica medieval española*, p.128; on turntables and kick wheels in Castile, Natcha Seseña Díaz, "Pucheros de Alcorón," *Revista de Dialectología y Tradiciones Populares*, 22 (1966), 129; "La alfarería de Mota del Cuervo," *ibid.*, 23 (1967), 339-346; and *La cerámica popular en Castilla la Nueva* (Madrid: Editora Nacional, 1975), Pp. 38-44.

47. Juan Zozaya, "Red-Painted and Glazed Pottery in Western Europe: Spain," *Medieval Archaeology*, 13 (1969), 133-136, and comment by Guichard, *Al-Andalus*, p. 306.

48. See references in Thomas F. Glick, "Noria Pots in Spain," *Technology and Culture*, 18 (1977), 646-647. Note also that English, albatross (first pelican, then frigate bird) derived from Portuguese, *alcatraz*, comorant is another derivative of *qâdûs*. See Eric Partridge, *Origins*, 2nd ed. (London: Routledge and Kegan Paul, 1959), p. 11.

49. Llubiá, *Cerámica medieval española*, pp. 37-38, 90, 115; Osma, *Maestros alfareros*, p. 7 n. 2; Wulff, *Traditional Crafts of Persia*, p. 144; Riaño, *Industrial Arts in Spain*, pp. 146, 153.

50. Robert Steele, "Practical Chemistry in the Twelfth Century," *Isis*, 12 (1929), 10-46 *passim*; Wulff, *Traditional Crafts of Persia*, p. 159; Daniel Rhodes, *Kilns: Design, Construction and Operation* (Radnor, Pa.: Chilton, 1968), pp. 36-37, 40 (especially figures 39 and 41); Llubiá, *Cerámica medieval española*, pp. 77, 183; Mut, *Vida económica en Lérida*, p. 101; Rodríguez Fernández, *Monasterio de Ardón*, p.215; Seseña, *Cerámica popular*, p. 50.

51. Torres Fontes, *Mudéjares murcianos*, p. 20; Juan Zozaya, "Cerámicas medievales del Museo Provincial de Soria," *Celtiberia*, 21 (1971), 217.

52. Elias Terés, "Abbâs ibn Firnas," *Al-Andalus*, 25 (1960), 241-242; Juan Vernet, "Abbâs ibn Firnas," *DSB*, I: 5.

53. Alice Wilson Frothingham, *Spanish Glass* (New York: Thomas Yoseloff, 1964), pp. 13, 20-24; Alfonso X, *Lapidario*, Maria Brey Marñio, ed. (Madrid: Castalia, 1968), pp. 204-205 (chaps. 259, 269).

54. Lombard, *L'Islam*, p. 191; Goitein, *Mediterranean Society*, I: 81, 91; Vernet, "Ciencia en el Islam y occidente," p. 550.

55. Mones, "Hommes de religion," p. 75; Martin Levey, *Mediaeval Arabic Bookmaking and its Relation to Early Chemistry and Pharmacology* (Philadelphia: American Philosophical Society, 1962), p. 10; Valls i Subirà, "Caracteristiques del paper," p. 321; Wulff, *Traditional Crafts of Persia*, p. 237; Alfonso X, *Lapidario*, p.106 (chap. 118); Madurell y Marimon, *Paper a terres catalanes*, I: 27; II: 967.
56. Lombard, *L'Islam*, p. 191; Madurell, *Paper a terres catalanes*, II: 963-968; Valls i Subirà, "Caracteristiques del paper," pp. 319-321; Burns, *Islam under the Crusaders*, p. 94; *idem*, *Medieval Colonialism*, pp. 238-239.
57. Castrillo Márquez, "Descripción de al-Andalus," p. 97.
58. Ettinghausen, "Interaction and Integration in Islamic Art," p. 110; *idem*, "Impact of Arts on the Arts of Europe," in *Legacy of Islam*, Joseph Schacht, ed., second ed. (Oxford: Clarendon Press, 1974), p. 298; Sánchez-Albornoz, *España: Un enigma histórico*, II: 108; Goitein, *Mediterranean Society*, I: 50; Lombard, *L'Islam*, p. 185.
59. Ibn Khaldûn, *The Muqaddimah*, II: 66-67; Gómez-Moreno, *Iglesias mozárabes*, pp. 123 (*tiracero*), 128 (*tiraz*); Jesusa Alfau de Solalinde, *Nomenclatura de los tejidos españoles del siglo XIII* (Madrid: Real Academia Española, 1969), p. 27; note the fame of Almería cloth in medieval French poetry (*ibid.*, pp. 22-25).
60. See Wulff, *Traditional Crafts of Persia*, p. 174; and Chalmeta, "El 'Kitâb fî âdâb al-hisba,'" *Al-Andalus*, 33 (1968), 398-399. The Castilian term *palacio*, meaning section of a comb, is a literal translation of Arabic *bayt* (house), the technical term for this implement.
61. Chalmeta, "El 'Kitâb fî âdâb al-hisba,'" *Al-Andalus*, 33 (1968), 405 n. 2.
62. Foster, *Culture and Conquest*, pp. 77-81; R. B. Serjeant, "Fisher-Folk and Fish Traps in al-Bahrain," *Bulletin of the School of Oriental and Asian Studies*, 31 (1968), 489; Braudel, *The Mediterranean*, II: 763; Juan Vernet, *Historia de la ciencia española* (Madrid: Instituto de España, 1975), p. 86.
63. Glick, "Medieval Irrigation Clocks," pp. 425-427; Steiger, *Toponimia árabe de Murcia*, p. 16 (similarity of Berber and Murcian sinking bowls).
64. Sánchez Pérez, *Personalidad científica de Alfonso X*; Silvio A. Bedini, "The Compartmented Cylindrical Clepsydra," *Technology and Culture*, 3 (1962), 116-117; White, *Medieval Technology and Social Change*, p. 122; J. M. Millás Vallicrosa, *Estudios sobre Azarquiel* (Madrid-Granada: C.S.I.C., 1943-1950), pp. 6-9.
65. On sugar, see Gual Camarena, "Peaje fluvial del Ebro," pp. 171-172; on tanning, John Waterer, *Spanish Leather* (London: Faber and Faber, 1971), pp. 15-16; on snow wells, Vernet, "Ciencia en el Islam y occidente," pp. 560-562.

66. On ivory, see R. Pinder-Wilson, "'Adj," *El²*, I, 200-203; *Poema de Fernán González*, p. 83 (*arquetas de marfil*); Riaño, *Industrial Arts in Spain*, pp. 12, 133, 138, 141; J. Ferrandis, *Marfiles árabes de occidente*, 2 vols. (Madrid, 1935-1940), I, 47.

67. Castro, *The Spaniards*, p. 298.

68. Vázquez de Parga, *Peregrinaciones a Santiago de Compostela*, II, 162-173 (Santo Domingo), 173-175 (Juan de Ortega); Francisco Grandmontagne, "Un santo hidráulico," *El Sol*, August 29, 1925 (on San Adelelmo, following Albarells, *Efemérides burgalesas*).

SCIENCE

1. Science and Cultural Values

[248] The passage of Greek science into Western Europe through medieval Spain has been one of the focal points of medieval intellectual history. Although the movement has been typically portrayed as a bipartite one, with translation from Greek into Arabic anteceding the florescence of Arabic science in the ninth century, and a later phase of translation from Arabic into Latin (eleventh and twelfth centuries) and finally into Romance vernaculars (thirteenth century), recent research demonstrates the continuous nature of the phenomenon.⁽¹⁾ The studies of Millás Vallicrosa show not only the continuity in scientific tradition between eastern and western Islam but also highlight the virtual contemporaneity of the production of Andalusí science and its transmission to Christian Europe.⁽²⁾ It is paradoxical that in both phases of transmission, the Islamic and the Iberian, the receiving societies have been characterized as the loci of cultural traditions inimical to the practice of science. The case is made for medieval Islam by G. E. von Grunebaum, who asserts that science and its technological applications had no root in the "fundamental needs and aspirations" of Islamic civilization. In the case of medieval Spain, Américo Castro was but one in a long series of participants in the "polemic of Spanish science" who have argued that science was a casualty of the wars against Islam, which had the effect of encouraging certain values and practices (honor, courage, religious fervor) and discouraging others (rationality, science, manual labor). A similar case has been made for the Christian West generally, as when Richard Lemay cites the inability of medieval Christianity, due to a pervasive obsession with the redemption myth, to come to grips with nature realistically.⁽³⁾

That similar points appear to have been made about all medieval cultures must affect the general evaluation of the impact of science on medieval societies. These kinds of essentialist generalizations are, in my view, extremely questionable because they assume, first, that values are homogeneously distributed among all strata of society and, second, because they rest on the ultimate association of the practice or non-practice of science [249] with modal personality ("national character"). It seems dubious on the face of it that a complex society, composed of a variety of social and cultural interests and backgrounds, can even be characterized as having "fundamental needs" (a concept much less easy to apply to group, than to individual, psychologies), much less "aspirations" (a teleological concept markedly out of place in objective historical analysis).

Von Grunebaum, in the passage just cited, in fact identified the true locus of the problem when he added that scientific accomplishment was achieved in the Islamic world only when and where elites were willing to exceed the bounds generally imposed by orthodox thought. In other words, the practice of science has a class basis which can be defined in social terms. (The same is true of "orthodox thought." Indeed, different segments of a society may well hold differing views of what is orthodox.)

The problem of medieval science is, then, less one of inhospitable cultural contexts and more one of selective barriers to its practice, each of which has a specific social or cultural locus. To the extent that both Islamic and Christian cultures prescribed definite bounds for scientific inquiry for the purpose of explicating a rather well-defined cosmology, the cultural climate may be defined as, if not inhospitable, then at least restrictive. On the other hand, the conceptualization of natural knowledge and its actual pursuit were two distinct phenomena. Belief did not necessarily interfere with practice: ibn Rushd was a religious judge. (Such examples could be multiplied.) Everyone believed that man was the center of a hierarchically organized universe and was in the power of non-corporeal beings. The culture of elites who practiced science was in part an expression of, and therefore fully congruent with, popularly held beliefs.⁽⁴⁾ Given these generalized views, medieval theology (which formulated the same beliefs according to different canons) offered selective barriers to the sciences, differing in impact to the extent that theological dogma might be challenged, and Christian theology offered relatively more barriers than did its Islamic counterpart.

2. Diffusion and Synthesis

Two chronological facts reveal much regarding the inception of scientific activity in medieval Spain. First is the late appearance of organized scientific activity in al-Andalus (mid-tenth century), and second is the rapidity of the transmission of Islamic science to Christian Spain. The late [250] start of Andalusí science has nothing to do with orthodox rigidity but simply reflects the changing demographic situation. Scientific activity began only when the phase of explosive conversion was well underway, implying the emergence of the necessary demographic weight to foment the division of labor requisite to the support of highly specialized individuals within the learned class, whose educational system could not have been institutionalized with any great depth prior to the tenth century.

An example of the rapidity of the movement of diffusion is the heavily Arabized Latin scientific miscellany from the monastery of Ripoll (MS 225, studied by Millás Vallicrosa), dating precisely to the late tenth century. This manuscript contains a treatise on the quadrant translated into Latin in the mid-tenth century from a contemporaneous Arabic manuscript, which in turn was based on older, non-Arabic sources. The *scriptorium* of Ripoll was the site of the first attempts in the West to synthesize the Arabo-Greek corpus in Latin (a manuscript of Boethius on arithmetic, with marginal notes in Arabic, for example, and a Latin translation of Māshā'allāh's treatise on the astrolabe). To Catalonia (and perhaps to Córdoba) went Gerbert of Aurillac in search of Arabic science in the 960's. When he returned to France, he wrote a friend in Spain requesting Joseph of Spain's work on multiplication and division, which, according to Millás, must be reckoned within the tradition of the diffusion of al-Khwārizmī.⁽⁵⁾ The putatively controlling values of these societies, therefore, did not affect the rate of transmission, which, in general, was very rapid. If the dominant values were both inimical to science, yet failed to slow the diffusion of scientific ideas, there is, at the very least, a contradiction in terms to deal with.

A different historiographical problem has been the nature of the diffusion process itself. Because of the fame of medieval translators, particularly those of Toledo, and their encouragement by royal patrons such as Alfonso the Wise, the role of cultural diffusion in

Spanish science has long been recognized. But the impact of that diffusion is open to speculation. Américo Castro has argued that medieval Spanish culture acted as a passive medium through which the scientific legacy of antiquity passed, leaving only minimal traces: "Muslim science and philosophy passed through Toledo on its way to Europe without affecting the Castilian mind."⁽⁶⁾ This characterization, which somehow conjures the image of Peruvian silver, flowing through Spain to the mercantile centers of [251] sixteenth-century Europe, while leaving the peninsula as impoverished as before, in part reflects the deficiencies of research in this area, but, more significantly, is a misconstrual of the way science functions. The process of transmission is by no means as mechanical as Castro seems to imply.

The practice of science, involving the observation of nature and the formation of hypotheses explaining the ordering and function of natural phenomena, requires certain social and cultural prerequisites. Scientific advance is a cumulative process and presupposes the constant evaluation and reevaluation of past and contemporary research. Historically, therefore, diffusion of scientific ideas across cultural boundaries (the "internationality" of science) has been a normative constituent of scientific growth.

The general thrust of Spanish historiography has been to regard the phenomenon of scientific translation as symbolic of what was most idiosyncratic about the medieval Spanish experience: the *convivencia* (to use Castro's term) of the three religions. This is a significant commentary on the current historiographical perspective, because diffusion is not only normal, but necessary, in order for science to develop.

As a movement of the passage of ideas from east to west, the diffusion of science closely parallels that of technology, with the distinction that the Chinese terminus is diminished in importance. Chinese culture, so productive as a source of technological innovation in the West, did not diffuse its theoretical ideas. This role was to a certain extent filled by India (in mathematics and astronomy) and Persia, but the most active center was the Arab-speaking East itself, where, especially during early 'Abbâsid times, a vast corpus of Greek scientific and philosophical writings was translated into Arabic, sometimes through a Syriac intermediary.

In contrast to the history of technological diffusion, the agencies and mechanisms of which often seem so problematical, the broad contours of the scientific movement present no great difficulties of interpretation. The cultural anonymity prevalent in the passage of so many techniques was largely obviated, in the case of science, by the conscious perpetuation of traditions of diffusion in written texts. Thus ibn Sâ'id al-Andalusî, author of an eleventh-century survey of the scientific production of various civilizations (really a primitive historical sociology of science in the Islamic world), devotes chapters to Indian, Persian, and Greek science, specifying those elements which had passed into the Islamic corpus. He is able to [252] trace the passage of the Indian astronomical tables known as the *Sindhind* into the corpus of Arabic science, through Persian intermediaries.⁽⁷⁾

It was characteristic of medieval science that unified bodies of scientific knowledge -- cosmographies, in fact -- were diffused in toto (the encyclopedia and the *summa* are typical products of this process). The diffusion of the corpus thus can be viewed as a holistic

process, although certainly the diffusion of individual elements can also be traced. The process by which Greek science passed to the Arabs and was worked into a new synthesis, and the later process, whereby the Arabic synthesis itself was transmitted to the Latin West, were virtually identical in structure: in each instance, classical texts were synthesized and systematized through a process of translation and commentary, which included the addition of new elements (in the form of criticism, theoretical innovations, incorporation of new observations), forming a new corpus which could then be transmitted through a further phase of translation and synthesis.

Although general barriers appear to have existed (e.g., Muslim qualms about Greek rationalism, Western fears of Islamic sorcery), in neither instance were these strong enough to have affected anything more substantial than delaying actions. Forces which hastened the diffusion of certain elements within the corpus and barriers which delayed the transmission of others seem to have been operative, but are not, as yet, well understood. For example, the extremely rapid diffusion of the *Sindhind*, Indian numerals, and algebra must have been linked to demand arising from specific interests within Islamic society: navigation, calendrical calculation, the administrative needs of state bureaucracies, and so forth. Sometimes a theory diffused faster than its practical application: the decimal place-value theory underlying Indian numerals was known to mathematicians long before businessmen started using them in commercial transactions. Sometimes, and Indian numerals again provide the example, a partial barrier had to be averted before full acceptance of the idea: the Indian method of calculating by writing numbers on a dust board was overly associated with the way astrologers cast horoscopes and so had to be adapted, in the tenth century, to writing on paper with ink. Moreover, the spread of certain innovations seems to have been impeded by the persistence of older scientific methods. Thus, al-Battânî's late ninth-century application of the principle of orthographic projection to achieve new solutions in spherical trigonometry did not reach Europe until the fifteenth century.⁽⁸⁾

3. The Social Bases of Transmission

The process of scientific interchange is predicated upon the emergence of concrete networks of scientific communication ("schools") within the various disciplines. The earliest such network to appear was the group of astronomers and mathematicians associated with Maslama of Madrid (d. ca. 1007). The creation by Maslama of a "school" of astronomers constituted by his own disciples and their students marks the beginning of science as an organized activity in al-Andalus. Maslama, according to Sâ'id al-Andalusî, was the best mathematician of his time, applying himself to the observation of the stars and to the study of Ptolemy's *Almagest*. He wrote a summary of al-Battânî's *zīj*, or astronomical tables, and refined the works of al-Khwârizmî, substituting the era of the Hejira for that of the Persians but without correcting any of the great mathematician's errors. All of Maslama's students adopted his concerns and worked within the disciplinary framework that he established; all immersed themselves in the works of al-Khwârizmî; all commented on the uses of *the Sindhind* and the astrolabe. The students of Maslama, as enumerated by Sâ'id al-Andalusî, and their students are enumerated in Figure 4. All those for whom no other field is mentioned cultivated mathematics in the sense conveyed in al-Khwârizmî's or al-Fârâbî's classifications of the sciences, with astronomy subsumed within the rubric of

mathematics. Note the dispersion of members of the school to virtually every important Taifa capital, where they formed autonomous clusters interlinked by virtue of master-student relationships. Thus 'Abd Allâh b. Ahmad, a student of ibn Bargûth's who lived in Zaragoza, was involved in a polemic with Abû Muslim b. Khaldûn of Seville, concerning errors in the movements of the stars reflected in the *Sindhind*.⁽⁹⁾

Similar patterns of communication, although less formally constructed, are noted in the Andalusí school of agronomists of the mid-eleventh and early twelfth centuries. The early nucleus of the school formed in Toledo, where ibn Wâfid was employed in the royal garden of al-Ma'mûn. After the conquest of the city in 1085, ibn Wâfid's student ibn Luengo and his colleague in the royal garden Ibn Bassâl removed to Seville, where they came into contact with another nucleus of agronomists, ibn al-Hajjâj, Abu'l-Khayr, and the mysterious "anonymous botanist" of Seville (studied by Asín Palacios), as well as al-Tignarî of Granada. The pattern of their personal contracts and inter citations is reproduced in Figure 5 and [256] illustrates the kind of complex network that was bound to underlie the "dense climate of botanical study and experimentation" described by J. M. Millás.⁽¹⁰⁾

The same kind of connections, more concentrated spatially, underlay the work of the great twelfth-century school of Aristotelian philosophers, centered mainly in Seville. The axial figure of the school was the Tufayl (d. 1185), linked to his teacher ibn Bâjja (d. 1139), and to a cluster of contemporaries with whom he met informally in Seville, a group which included ibn Rushd (Averroes) (d. 1198) and ibn Zuhr (d. 1162).

Groups involved in translation were more cosmopolitan but structured along the same lines. It should be stressed that, in the medieval milieu, translation was by no means a mechanical or uncreative function. It was one of a number of things a scientist did -- one of the most important and creative of scientific functions, particularly if it came early in the process of diffusion and synthesis. Thus typical figures of that stage -- such as Hunayn b. Ishâq (in ninth-century Baghdad) or John of Seville and Abraham bar Hiyyâ' in twelfth-century Spain -- both translated and wrote original scientific works, the latter highly colored by their work in translation. It is this generation of scholars that makes the largest contribution to the creation of a new scientific vocabulary, in which the work of synthesis can be articulated, and which also substantially selects those areas of the transmitted work which will form the basis of the new synthesis.

An example of an Andalusí group involved with translation is a circle of men interested in botany and pharmacology in the court of 'Abd al-Rahmân III and patronized by the Jewish physician Hasdây ibn Shaprût. This was the group entrusted with the evaluation of a Greek manuscript of the *Materia Medica* of Dioscorides sent by the Byzantine emperor as a gift to the Caliph in 948/949. Although translation was not the purpose of their research (they had available Stephan ibn Basîl's Arabic translation, as revised by Hunayn, and were concerned only with elaborating an Andalusí nomenclature, including Romance variations of plant names, in order to adapt Hunayn's text to Iberian biogeography), the Cordoban scholars took pains to include colleagues with linguistic accomplishments in their group. On request of the Caliph, a Byzantine monk, Nicholas, was dispatched in 951/952, and he collaborated with a Greek-speaking Sicilian Arab, five Andalusis, and ostensibly Hasdây himself. Roughly the same group was still functioning during the reign of al-Hakam, and

was joined at that time by ibn Juljul, physician and pharmacologist, who continued [257] to work on materia medica, producing a *Treatise (Maqâla)* on Dioscorides containing his personal synthesis. This group of naturalists patronized by the Caliph was well-known for its Hellenizing interests, and Vernet assumes that Maslama of Madrid was associated with them as a young man.⁽¹¹⁾

The "schools of translators" of twelfth and thirteenth-century Spain likewise formed cohesive groups with clearly identifiable lines of intercommunication. The important group of the mid-twelfth century, which included Hugh of Santalla, John of Seville, Domingo Gundisalvo (González), Gerard of Cremona, Plato of Tivoli, Rudolph of Bruges, and Hermann of Carinthia, worked in dispersed foci but remained in contact with the axial center of Toledo. As Richard Lemay points out, with the exception of Hugh of Santalla, a Spanish priest who worked alone in Tarazona, all these translators knew one another, exchanged views, shared the same methodology of translation and synthesis, and responded to the demands of a specific, and substantially the same, reading public. The patterns of intercitation (Plato of Tivoli's dedications to ibn Dâwûd and John of Seville; Rudolph of Bruges' to Hermann of Carinthia and ibn Dâwûd; and so forth) substantiate this assertion.⁽¹²⁾ Alfonso the Wise's innovation, the following century, was to concentrate the work of the scholars in one center, Toledo, and to regularize research procedures by instituting a greater division of labor (there were researchers -- *ayuntadores* -- as well as translators).

Although numerous translators from Arabic into Latin worked alone, the usual *modus operandi* was for two scholars to work in tandem, a practice which lent characteristic social coloring to the process. The basic procedure was for one scholar to translate aloud from the Arabic text into the vernacular and for the second to translate from the vernacular, producing a Latin draft. Thus John of Seville characterized the translation of the *De Anima* of ibn Sîna: "The book ... was translated from Arabic, myself speaking the vernacular word by word, and the archdeacon Dominic converting each into Latin."⁽¹³⁾ Frequently, the translator from Arabic into Castilian (or Catalan) was a Jew (or a converted Jew, as is probable in the case of John of Seville in which case the other member of the team would be a Christian, typically a cleric. Thus ibn Dâwûd worked with Gundisalvo; Abraham bar Hiyya probably translated with Plato of Tivoli; among Alfonso the Wise's collaborators, Judah Mosca and the priest Garci Pérez translated the *Lapidario*, and the *Libro de la ochava* [258] *esfera* was the work of Yehuda Cohen (*el Cohenenso*) and Guillen Arremon Daspa. Gerard of Cremona worked with a Mozarab named Galippus, who may merit greater recognition than he has generally received.

The place of Jews in this scheme is obvious: many were trilingual, knowing Hebrew, Arabic, and a romance language. Jews had indeed been accustomed to translate from Arabic into Hebrew, not a difficult task, given the linguistic and semantic similarities between the two languages, or to write in Judeo-Arabic (Arabic written in Hebrew characters). In the latter case, they were able to create a flexible medium for scientific and philosophical expression. This fitted them ideally for the work of translation, which involved the creation in the vernacular and in Latin of virtually an entire new scientific language (particularly in astronomy, where Arab scientists had vastly enlarged the range of observational data, and mathematics, particularly algebra, where the translations were conduits of methodologies

unknown in the Latin tradition). For similar reasons, converted Jews -- still bilingual, but educated in Latin -- felt less bound by Latin conventions. No doubt one can agree with Américo Castro that Jews played an influential role in the creation of a Castilian language that could be used as a vehicle for philosophical and scientific thought. However, this is probably more owing to their biculturalism and to their ability to transmute Arabic into a number of different forms than to their supposed religiously motivated hostility to Latin. In any case, Jewish translations into Castilian became committed to writing when Alfonso the Wise assigned to translating sessions an additional scribe to write down a Castilian draft as well as the customary one to write down the Latin. Other Alfonsine scholars, such as Isaac ibn Sîd, also composed scientific treatises in the vernacular languages.⁽¹⁴⁾

Science, then, was not in evidence as an organized activity in medieval Spain until the mid-tenth century, the direct reflection of the institutionalization of education in al-Andalus in response to the explosive wave of conversions. One would in consequence expect *muwallads* to be visible amongst these early circles of naturalists. Considering the physicians in the court of al-Hakam II, one notes a number of men who were the children or grandchildren of converts of the late ninth or early tenth century; ibn Juljul (whose father's name was Hasan, a typical secondgeneration *muwallad* name); Ahmad b. Hakam b. Hafsun, whose grandfather would also appear a convert; and 'Arîb b. Sa'd al-Kâtib al-Qurtubî, author of the *Calendar of Córdoba*. A similar case is Yahya b. Ishaq, a [259] physician in the court of 'Abd al-Rahmân III, whose father had been a prominent Christian doctor in the epoch of the emir 'Abd Allah.⁽¹⁵⁾

An indirect corroboration of the thickening of scientific networks within the country is the observation that, on the whole, fewer Andalusis traveled east in search of knowledge in the tenth century than did in the ninth.⁽¹⁶⁾ Before the formation of Andalusî scientific schools, scientific knowledge was imported from the East, through the agency of Andalusî scholars who went there to study. Before the impulse given the study of pharmacology by the gift of the Dioscorides manuscript, for example, Andalusî pharmacological students were generally trained in Baghdad. From the same city, 'Abbâs b. Firnâs is said to have brought the *Sindhind* first to al-Andalus, in the late ninth century. In succeeding centuries, Andalusî scholars were still much in evidence in the East, as they maintained scholarly communication with the far-flung scientific community of the Islamic world. Thus, Maslama's student al-Kirmânî had also studied as far to the east as Harrân in northern Iraq (now in Turkey). In the eleventh century, ibn Bassâl gathered agronomical lore in Sicily, Egypt, and Khurâsân and, towards the end of the century, Abul-Salt, an eclectic scholar from Denia who wrote on philosophy, astronomy, and pharmacology, studied in Alexandria and Cairo. In the thirteenth century Yahya ibn Abî Shukr al-Andalusî worked at the Mongol observatory at Marâghah (Azerbaijan) and wrote reports on Chinese astronomical and calendrical observations.⁽¹⁷⁾

The demand for scientific information was a function of the differential development of scientific centers. When the Islamic East had scientific centers and the West had none, Andalusî scholars had to travel in order to learn. The same is true with regard to the later quest of the Latin West, including Christian Spain, for Islamic science. Juan Vernet has shown that the numbers of scientists in the Christian West and in the Islamic world as a whole did not reach parity until the second half of the eleventh century (Figure 6). Parity

in quality of research was achieved at roughly the same moment as equality in numbers. The lowering of Islamic superiority from an order of nine-to-one in the ninth century to three-to-one in the late tenth century explains why the initial demand for Arab science came when it did, in Catalonia in the last quarter of the century. The shift in the balance of scientific production in favor of the West accounts for the demand for translations which became acute in the half-century directly following the establishment of parity.

[260] Growth in numbers of scientists brought a corresponding thickening of linkages among them, a process we have described as the formation of networks of scientific communication. Frequently, such clusters enjoyed the protection of a king or lord, and the most important scientific circles all had such patronage. The model for such enterprises was perhaps the famous "academy"-- *Dâral-hikma* -- of the 'Abbâsid caliph al-Ma'mûn, where scientific observation and translation were encouraged on an organized basis. In al-Andalus, one might mention 'Abd al-Rahmân III's support of botanists and pharmacologists, al-Hakam II's patronage of astronomy (not the least among the benefits this monarch could offer was his magnificent library, containing numerous works of Hellenic inspiration later burned by al-Mansûr); the work of the agronomists for the kings of Toledo and Seville; the support of Almohad rulers for Andalusí Aristotelians; and Alfonso the Wise's encouragement of both translation and scientific synthesis. With regard to the latter, Menéndez Pidal's suggestion that Alfonso was imitating the Taifa kings is a moot point. There was ample precedent among his own progenitors for such largesse. The [261] princess Teresa, for example, daughter of Alfonso VI and mother of Alfonso Henriques, discussed physiology with John of Seville, who, in turn, dedicated some medical translations to her. Knowledge-loving kings frequently had scholarly conversations with their protégés; Alfonso's intervention was more direct and structured. He personally determined research strategies not only by commissioning work (both translations and original treatises) but by supervising the research groups in regular conferences.⁽¹⁸⁾

4. The Unity of Scientific Knowledge

The hallmark of medieval science in Spain was a basic identity in aims and techniques among Muslim and Christian naturalists. At the foundation of the whole enterprise was a pervasive Aristotelianism, inflected with Neoplatonic concepts of a hierarchical chain of being which knitted the diverse disciplinary threads of scientific inquiry into a unified cosmology, presenting a structured conception of nature compatible in most respects both with Islamic and Christian theology. (In comparative perspective, it is well to note that both religions tended to have difficulty with the same problems, for example, the eternity of the universe, and that those who accepted the rationalist outlook constituted a minority of educated people.)

Aristotelian cosmology as a general basis for scientific explanation manifested itself most typically in astrological works through which, according to Lemay, the initial diffusion of the Aristotelian corpus, as synthesized by Muslim scholars, was received in the Christian West. Thus the earliest Aristotelians in the Christian West were not scholars interested in philosophy, but, rather, naturalists who looked to astrology for theoretical orientation. Astrology was viewed by such thinkers as the highest natural science, based upon the central Aristotelian propositions that celestial motion accounts for all physical activities in

the universe and, therefore, that the motion of celestial bodies influences earthly ones and causes their motion. Astrology, as the science of "judgments" (the medieval *iudizios*) was closely related to astronomy proper, which involved the observation of celestial movements; the practice of the two was intertwined. Those who rejected the "judicial" (i.e., prognosticatory) aspects of astrology did not necessarily reject it as a general explanatory system.⁽¹⁹⁾

The assumption that bodies interconnected in the great chain of being [262] had mutual influence over each other accounted for the blurring of boundaries between observational astronomy and interpretive astrology, between alchemical technology and its mystically tinged theory, and between science and magic generally. Because it was the place of transit of Arabic astrology, Spain, and Toledo in particular, became associated with "black magic" in the European popular imagination, notably in the thirteenth century. Throughout Western Europe *ars* or *scientia toletana* became synonymous with magic -- a local speciality, just as Almería stood for fine cloth. Thus Caesar of Heisterbach tells the story of two Swabians studying the *arte nigromantica* in Toledo, just as later Don Juan Manuel (nephew of Alfonso the Wise) would describe the fictitious Dean of Santiago as wanting to learn the art of necromancy and, hearing that Yllan of Toledo knew more about it than anyone else in the world, he came to Toledo to learn that science.⁽²⁰⁾ But the distinction between science and magic was a subtle one: both partook of the classical theory of the elements and of notions of celestial harmony which indicated that creation was ordered and that matter could be transformed in accordance with celestial cosmology. Science and magic were blurred in the Islamic world, according to A. C. Crombie, because the Muslim approach directed the search for natural knowledge into those areas that would yield the most power over nature. Yet I doubt if Muslims emphasized this value more highly than did Christians. As Lynn White has argued in numerous essays, medieval Christians eagerly embraced technologies which aided in the fulfillment of the Biblical commandment to subdue the earth. Alchemy and astrology were no less integral in Christian than in Muslim science.⁽²¹⁾

Perceptions were muddled. Gerbert of Aurillac was described by Ademar of Chabannes as having travelled to Córdoba for the sake of knowledge -- *causa sophiae*. But throughout the twelfth century it was also said that Gerbert had practiced Saracen divinations and incantations in Seville and Toledo and had stolen magic secrets from Muslim necromancers.⁽²²⁾ The discrepancy between the towns mentioned is significant. The learned source (Ademar) correctly judges Córdoba to be the center of Islamic learning in the late tenth century; the popular legends reflect the aura of Toledo in the heyday of the movement of translation.

As my mentor Samuel Waxman concluded a half century ago, there was a marked tendency in the later Middle Ages "to associate all learning and learned men, regardless of their epoch, with Toledo." Late in the thirteenth century, a member of Alfonso the Wise's scientific circle, Gil [263] de Zamora, summed up the scientific movement in retrospect, citing magic and science as if the two were synonymous: "In the magical art and the science of astrology there were few more learned than Spanish philosophers. So declare the books and tables of Toledo, where almost all philosophical books were translated from Arabic into Latin. Therefore John of Seville and some others in Seville and Murcia stood

out as the most learned in astrology."⁽²³⁾ Toledo thus became the palpable symbol for the scientific enterprise and assumed all its ancillary connotations as well. In point of fact, however, scientific activity was dispersed throughout the peninsula, with Toledo playing, in the twelfth and thirteenth centuries, an axial or coordinating role. More generally, Arabic itself was regarded in the Christian scholarly world as a language in which secrets of the natural world were hidden. Arnald of Vilanova remarked that he had read in the Arabic language the entire necromantic literature, which, with critical discernment, he regarded as a false doctrine.⁽²⁴⁾

Aristotelian notions regarding the order of the universe and, in biological sciences, Hippocratean and Galenic theories of the correlation of humors (dependent in turn on classical notions of the four elements of air, water, fire, and earth, and their interrelationship) recurred at all levels of thinking about the natural world. Easily noted are the intrusions of classical scientific theory in popularizing texts of the thirteenth century: for example, in the Hispano-Magribi cookbook edited by Huici Miranda, the recipes are interrupted by several pages of Galenic digestion theory noting the necessity of balancing different kinds of food in a meal according to the principles of correlation of the elements. Likewise, the *Lapidario* of Alfonso X, a descriptive enumeration of minerals containing numerous fabulous elements, translated from an Arabic manuscript, begins with an observation from Aristotle that all things are ordered according to the movements of celestial bodies, which accounts for the arrangement according to the signs of the zodiac of the rocks described.⁽²⁵⁾

The theoretical basis of the works of the Andalusí agronomists has been described by Lucie Bolens as an eclectic Aristotelianism, transmitted through Galenic medicine, to which they recurred whenever they wished to provide a theoretical framework for their experiments or observations. Since earth is cold and dry by nature, it must be made warm and humid in order to render it susceptible to cultivation. Plowing restores heat to the soil, modifying its basic nature, as does the application of fertilizers, which were classified according to heat and humidity. Ash could be [264] applied, for example, to temper the excessive heat or moisture of a given fertilizing substance. Rain and irrigation water were viewed as balancing mechanisms, reconciling the nature of fire with that of earth to attain a harmonious equilibrium by adding moisture and cooling the earth at the same time. Thus, Bolens concludes, the Andalusí agronomists made Aristotelian philosophy operative by measuring its principles against their own observations, which were then cast in Aristotelian language. In these works, natural knowledge was liberated from the Neoplatonic esoterism prevalent in the science of the Islamic East.

The sources of the agronomic school were eclectic in the extreme: Aristotle, Columella (who was known directly from the Latin tradition), a variety of late imperial and Byzantine sources, as well as the *Nabatean Agriculture* -- ibn Wahshiyya's ninth-century compilation of eastern agronomical traditions and practices.⁽²⁶⁾ Andalusí aeronomical lore passed on to Christian Spain in a number of medieval translations (for example, the fifteenth-century Castilian version of ibn Wâfid studied by Millás) and the sixteenth-century agricultural treatise of Gabriel Alonso de Herrera. These notions, so widely diffused that they passed into folklore, were transmitted by a variety of agencies, both formal (eastern and western manuscript traditions) and non-formal (generalized practice of cultivators).

The development of astronomy was somewhat less eclectic. Medieval Islamic astronomy was mainly a continuance of the Hellenistic norms of Ptolemy, improved by the addition of new and more precise observational data as well as the use of Indian trigonometric techniques. According to this system, the earth remains at rest in the center of eight spheres, the last of which contains the planets and revolves from east to west daily. In general the planets proceed in the same direction as the stars, but some appear at times to move backwards. Andalusí and other Muslim astronomers were much concerned with establishing with accurate calculations these relatively minor anomalies of planetary motion, in order to enhance the precision of astrological and calendrical computation. Thus there is a great deal of discussion, much of it polemical, concerning the prograde and retrograde motion of planets (about which there was little agreement, except to contradict the Ptolemaic notion of a constant precession), and the trepidation or oscillation of the eighth sphere. These intricacies were explained by a complicated system of epicycles and eccentrics in order to "save the phenomena" by whatever contrivance.⁽²⁷⁾

[265] As a practical science, then, astronomy was centered on the use and refinement of astronomical tables and of certain instruments such as the astrolabe and the armillary sphere, designed to achieve precision in observation and calculation. The family of medieval Arabic astronomical tables (*zījât*; singular, *zīj*), which were used to calculate planetary motion, eclipses, solar declination, as well as various trigonometric functions, were descended from Indian tables called *Siddhanta*. They were first brought by an Indian traveller to the court of al-Mansûr in Baghdad, where they were translated into Arabic under the title *Zīj al-sindhî* (the latter word yields an evocative pun in Arabic, combining the names of the Sind, the region around Karachi, and Hind, India). A number of scholars revised these tables, including al-Khwârizmî (first-half ninth century), who produced a version with the same title, adding some material from Ptolemy but not any original observations.

E. S. Kennedy has studied the entire genealogy of *zījât* as continuous elaborations on basic themes of Ptolemaic astronomy. According to Kennedy's synoptic table, the Andalusí family of *zījât* betrays a concentration of astronomic activity in the eleventh and twelfth centuries, bracketed by two periods of eastern preeminence centered in Iraq and Persia.⁽²⁸⁾ The shifting geographical focus is significant. In astronomy, as in other sciences, ideas flowed eastward to al-Andalus until the twelfth century, after which the direction reversed itself, reflecting the coming of age of Andalusí science.

Al-Khwârizmî's *zīj* was the one revised by Maslama of Madrid (who adopted it to the era of the Hejira) and possibly by ibn al-Saffâr. Parts of this version concerning lunar motion were incorporated into a treatise by Pedro Alfonso (apparently written in Arabic), which was translated into Latin around 1110 by Walcher of Malvern; the entire work was rendered into Latin by 1126 by Adelard of Bath.

Al-Battânî, a ninth-century Iraqi astronomer, also compiled an influential *zīj*, more eclectic and innovative (he included his own observations) than al-Khwârizmî's. Al-Battânî's tables were very influential in medieval Spain. They were cited by bar Hiyyâ' and ibn 'Ezrâ and translated into Latin by the former's colleague Plato of Tivoli and into Castilian on orders of Alfonso the Wise. Nevertheless, the excellence of al-Battânî did not diminish either the

popularity or the influence of al-Khwârizmî's tables, which were diffused in the West not only through Adelard's translation, but also through the so-called Toletan Tables. These latter were a [266] new synthesis, based on the work of al-Zarqâl (Azarquiel, d. 1100) and the group of astronomers in Toledo patronized by the judge ibn Sâ'id, and reflected the influence of al-Khwârizmî, as revised by Maslama, of al-Battânî, and of Thâbit ibn Qurra's theory of trepidation. Al-Zarqâl also wrote a treatise on the movement of the fixed stars, a discussion of theories regarding the solar year implicit in the *Sindhind* and which was critical of ibn al-Samh's treatment of the same issue. Al-Zarqâl and his associates constructed refined astrolabes for observing the sun's movement, on the basis of which they were able to state that the Persians, Indians, and their Muslim followers had been deficient not in observation but because of errors in the root used for calculations. The Toletan Tables were translated into Latin near the end of the twelfth century by Gerard of Cremona. Alfonso the Wise's contribution to this tradition, the *Tablas alfonsinas*, were based on al-Zarqâl's work but included numerous corrections and additions based on observations carried out by his court astronomers in Toledo between 1252 and 1262. Abraham Zacut, whose solar declination tables were used by explorers of the sixteenth century to calculate latitudes, followed al-Zarqâl on planetary and solar motion and said that both his and the Alfonsine tables erred on the nature of prograde and retrograde motion.⁽²⁹⁾

The astrolabe was a composite astronomical instrument which performed a variety of operations. The most common form, the planispheric astrolabe, had on its front a zodiacal circle and a disc (*safîha*; *azqfe*, in medieval Castilian) designed for a specific geographical latitude, with a stereographic projection of the equator, the tropics, and the horizon. From this, various problems of spherical astronomy could be solved, the hour of the day measured, and horoscopes cast. The back of the instrument was divided into four quadrants, upon which the declination of the sun with respect to its observed height could be read directly (with the use of a sight or alidade), without the observer having to consult declination tables. This aspect was of immense significance to navigation since the latitude of a place could thereby be determined by the elevation of the sun, and vice versa. The quadrant with alidade also became a common surveying instrument.

The major contribution of Andalusî astronomers to the design of the astrolabe was the so-called "universal plate" (*lâmina universal*), generally associated with al-Zarqâl, who was perhaps inspired by the navigational chart of 'Ali ibn Khalaf, also of Toledo. This innovation, which avoided [267] the inconvenience of having to change the *safîha* for each latitude, was perhaps a logical reflection of the general experience of Andalusî astronomers who, being located on the periphery of the Islamic scientific community, had perforce to adjust all tables and instruments to their own latitude before they could proceed with observations. The universal plate was illustrated in the Alfonsine *Libros de saber de astronomia*, through which it became known in Europe, as did the armillary sphere.⁽³⁰⁾

The adjustment of the tools of classical astronomy to Iberian latitudes was also reflected in astrological lore, whereby signs of the zodiac became associated with specific Spanish towns or regions. An astrological treatise written by 'Ubayd Allâh al-Istijî, a member of al-Zarqâl's circle, and which was later translated (and doubtless emended) by two Alfonsine astronomers, Jehuda b. Mosse and John Daspe, specified that Virgo had power over

Córdoba, Cancer over Seville and Cádiz, Leo over Murcia, Valencia, and Barcelona, and so forth. This *Libro de las Cruces* also associated the power of individual planets with specific ethnic groups -- Jupiter with Christian Spaniards, Mars with Arabs, Saturn with Berbers, Venus with Franks. In this manner, the specific contours of medieval Iberian society could be accommodated within the classical cosmology.⁽³¹⁾

Calendrical calculation was the work of specialized astronomers called, in the Islamic world, *ahl al-hi'sāb* ("people of computation"). The calendrical system employed was an astrological one of Indian inspiration which tracked the course of the sun through twenty-eight lunar mansions (*anwā'*), which were held to determine the nature of the progression of the seasons and the agricultural year. Actually the Muslims maintained a dual calendrical system: a lunar one for religious purposes, standard throughout the Islamic world, and a solar one for agricultural use, which bore regional inflections, the Arabs adopting the local calendar to their needs. Representative of the latter is the Calendar of Córdoba, the *Kitāb al-anwā'*, compiled in the ninth century by 'Arīb b. Sa'd. Under each month of the Christian calendar there follows the name of the month in Syriac and Coptic (two other solar calendars of Christian origin), and the number of days in the month, its sign of the zodiac, and the mansions through which the sun passes during it. (Note that Andalusī astrolabes also used the Julian calendar, allowing astronomers to provide calculations for both solar and lunar calendars.) Then follows information relating to classical element theory and related notions of humoral pathology: the elemental nature of the month, its "conformity," and the controlling [268] humor. Thus, January was cold and humid by nature; its conformity was the nature of water, and lymph was the reigning humor. In contrast, August was hot and dry, with the nature of fire, and yellow bile the dominant humor. This system provided a framework for dietary and medical considerations, as well as an indication of what crops were favored by the astrological conjunction. Also included are astronomical calculations, such as the average length of day and night, the times of sunrise and sunset, the height of the sun at noon, and so forth.⁽³²⁾ This scheme, of course, encompassed many of the same theories as appeared in the work of the agronomists and was an interpretation for a non-scholarly reader of the same cosmology that we have been discussing.

In sharp contrast to the prevailing Ptolemaic wisdom were the exaggerated, purist Aristotelian views of ibn Bājjā (known in the Latin West as Avempace), adopted and further elaborated by his followers ibn Tufayl (Abubacer), ibn Rushd (Averroes), and al-Bitrūjī (Alpetragius). At the core of their astronomical theory was a rejection of the Ptolemaic system of explaining the observed irregularity of planetary motion by movable eccentrics and epicycles, an explanation which, according to ibn Rushd, may provide an adequate mathematical model but one which in no way corresponds to physical reality. The methodology of saving the phenomena had to be abandoned in favor of Aristotelian homocentric spheres (a less accurate explanation than Ptolemy's, in fact) because, in ibn Rushd's view, the entire Aristotelian cosmology had to be accepted in the interests of philosophical coherence. In al-Bitrūjī, the celestial spheres revolve around different axes, producing a spiral motion which explains the observed irregularity of planetary orbits.⁽³³⁾ The conflict between the two systems became general among European scientists after Michael Scot translated al-Bitrūjī's *Liber Astronomiae* (*Kitāb fī'l-hay'a*) at Toledo in 1217.

5. Patterns of Cultural Influence

Although the growth of medieval science was predicated upon diffusion of ideas from east to west, these ideas were by no means received uniformly. Here we will first examine three disciplines-- arithmetic, chemistry, and pharmacology -- in which the Islamic imprint upon Christian thought was marked; but in each case the pattern of intercultural influence was somewhat different, highlighting distinct aspects of the process of diffusion: variation and selectivity in the case of arithmetic, the [269] screening effect of translation in the case of chemistry, and cultural adaptation in the case of pharmacology. Finally, the entire movement of transmission will be considered in its totality, particularly as regards the overall organization of the natural sciences.

It is well known that the Arabs transmitted both Indian numerals and the decimal place-value idea to the medieval West. There were two families of number forms, Hindi or Indian in the Islamic East, *ghubâr* or "dust numerals" (from the practice of performing numerical operations on dust boards) in the West. In fact, the names were frequently interchanged and the forms of the numbers were chaotically intermixed. Adding to the complexity of the process, the place concept and the number forms diffused at different rates. Indian numerals were known in the East in the eighth century and turned up in Christian Spain in the ninth -- in the Oviedo miscellany, which has marginal notes in Arabic with Indian numerals, including the zero. The Albeldense codex of 976 contains Indian numerals from one to nine, written from right to left. Mozarab scribes appear to have learned the numerals a century before their northern correligionaries, but did not understand positioning. In any case, these examples were precocious because the Indian system was not very widely used at this time by Arab scholars themselves, who preferred a notation system of Greek inspiration, whereby letters were assigned numerical value.

The transmission of Indian numerals bears a strong Toletan stamp. In Toledo, al-Khwârizmî's book on the Indian style of calculation (*hisâb al-hind*) was translated into Latin under the title *Algoritmi de numero indorum* ("algorithm" being a bastardization of al-Khwârizmî's name). The numerals themselves became so strongly identified with the translation movement centered in Toledo that they were known in Europe as Toletan numbers -- *toletane figure*. The presence or absence of the zero in medieval manuscripts is the strongest indication of whether or not the place-value concept was known. The term "zero" itself comes from Arabic *sifr* ("void"). *Sifr* was Latinized as *zephirum* and then, since among Castilian speakers *f* was confused with *h* and was often lost, *zephirum* gave rise to zero. Through a parallel transmission, *sifr* gives Spanish *cifra*, English "cipher," and so forth.

The emergence of standard notations for each number yields insight into the process of cultural diffusion in medieval Spain. Gonzalo Menéndez Pidal demonstrates that the nine figures themselves were in a continual [270] state of change throughout the middle ages; for example, a shape similar to our modern 2 was used at various times in writing 4 and 8. The same author hypothesizes that there was more variation in numeral form in Spain than in other European countries because Spain was a focus of multiple innovations. This conclusion is extremely perceptive and, without doubt, accurate. In the constantly shifting cultural milieu of medieval Iberia there were no strong institutional supports for any standard set of numerals. Moreover, the processes of calculation in Christian Spain were

generally individualized and private, with the results frequently given in Roman numerals. Therefore, numeral form was a personal choice. The factors affecting selection are not understood but, according to Richard Lemay, the 4, 5, 6, 7, 8, and 0 as we now know them all evolved in medieval Spain.⁽³⁴⁾

The relationship between practical chemistry and alchemy parallels that between astronomy and astrology, alchemy being described by Islamic alchemists as "inferior astronomy," the seven basic metals corresponding to the seven planets. According to Jâbir, gold was the most perfect metal because in it the four qualities were perfectly balanced, just as the four humors were in a healthy individual. The basic practices of medieval alchemists were processes of distillation, sublimation, and cupellation, used to purify or amalgamate mineral substances. Certain of these processes were not only complex but had economic significance as well. Cupellation procedures, whereby gold and silver were extracted from alloys with baser substances, had obvious ramifications in the monetary economy of the medieval Islamic world. The hardware used in these practices (such as the oven used in the reduction of cinnabar to mercury, *shabîka* in Arabic, yielding the Arabism *xabeca*), as well as the most common substances employed (for example, the "Seven Spirits") were known in medieval Castilian by mainly Arabic terms (Table 5), a strong indication of the almost total reliance of Christian upon Muslim chemistry.⁽³⁵⁾

The *theory* underlying alchemical practice, however, aside from its astrological or cosmological implications and associations, was the result of a quite different process, highly colored by the mechanics of transmission itself. The alchemical tradition, according to M. P. Crosland, was "plagued by errors in the copying and translation of texts and, more fundamentally, by semantic changes," so that it was never clear whether an alchemical term stood for an object or for the *idea* of that object. Thus, as a method for transforming base metals into gold, alchemy was largely [271] the result of errors accrued during the transmission of ideas from one language or culture to another. To the Alexandrine alchemists, "gold" meant any metal or alloy so colored (it was the quality associated with the substance, not the substance itself), and the original sense of transmutation was that of dipping, as when dyeing a fabric.⁽³⁶⁾ Alchemical theory therefore was the creation of the process of transmission and translation and was constructed upon misunderstood, misconstrued ideas which receded further from their original sense with each new act of transmission. Alchemy was an extreme case, but all scientific information was susceptible to analogous terminological and semantic distortion.

Medieval pharmacological theory, like medieval medicine generally in Islam and the West alike, took the form of an extended commentary upon Galen, comprehended within the broader structure of Aristotelian cosmology. According to Galen, the humoral imbalance which constituted illness had to be treated by administering to the patient a drug equal in [272] strength (on a scale of four degrees) but opposite in quality to the imbalanced complexion it was supposed to cure. But the Galenic theory was of no practical use to pharmacologists so long as the intensive effect of a drug could not be measured quantitatively. Arab medical writers attacked Galen on the grounds that each individual differed in complexion (thereby negating the necessity for a unified theory of pharmacology), but they were nonetheless able to improve the theory by formulating precise mathematical relationships between a medicine's weight and its therapeutic value.

Thus al-Kindî, in a treatise translated by Gerard of Cremona under the title *Quia primos*, asserted that the complexion of a compound medicine could be mathematically derived from the qualities and degrees of its component samples and that there was a geometrical relationship between increasing quantity and degree of effectiveness.

Al-Kindî's work had been known in the West for a century before its value was appreciated, or even understood. It was assimilated and made palatable to Christian physicians by Arnald of Vilanova, by a process of synthesis admirably explicated by Michael R. McVaugh, whose analysis I follow here. Arnald was conversant with Arabic and translated a number of medical works: the *De rigore* of Galen, Abu'l-Salt's treatise on simples, and ibn Sîna's *Liber de viribus cordis*, among others. Moreover, he used these works and others that he had read in Arabic, but had not translated, in his university lectures. In his treatise *Aphorismi de gradibus*, edited by McVaugh, Arnald accepted al-Kindî's views on the relationship between quantity and degree in formulating dosages, molded these together with ibn Rushd's notion of prime quantities, and with ideas on the role of fermentation (chemical reaction) in confecting a compound medicine from a mixture developed earlier by Peter of Spain and John of St. Armand, in order to form a unified theory of pharmaceutical action.

Thus far the mechanisms of cultural synthesis seem obvious: Arnald was able to read Arabic works available in Spain and to fit them to his own needs. But to understand the delay in the diffusion of al-Kindî's ideas is more difficult. McVaugh makes clear that Arnald's creativity lay not only in the pharmacological synthesis that he was able to achieve but also in the fact that he was able to make these notions intelligible to the Christian scientific community by locating them within a philosophical context relevant to dominant Western interests. Scholastic philosophers had been interested in the problem of qualitative change (as in such questions as whether, and how, charity might be said to increase) and [273] within this framework Arnald was able to interest others in the problem of how, for example, qualities like heat and cold might increase in the complexions of individuals or medicines.⁽³⁷⁾ In this discussion, a further dimension of the process of scientific diffusion is elucidated: even if the agencies of diffusion are abundantly present (Arabic manuscripts, translated versions, physicians who read Arabic), an idea may not diffuse unless it is congruent with the dominant modes of thought of the recipient culture. If incongruent (or apparently so) it must be stated in familiar terminology or placed within a recognized framework which makes it intelligible and renders its acceptance reasonable.

The impact of Islamic science on the West transcended the total of the elements diffused individually. This is particularly so when one considers that this impact set in motion a chain of events leading to the emergence of modern science. But in a more limited sphere, there was the creation of language in which the new scientific knowledge could be articulated, the semantic reality underlying that language, and, finally, a structural framework in which the natural sciences could continue to expand.

The nature of the act of translation imposed its own idiosyncratic effects. Some were purely mechanical: in the transmission of scientific names or technical terms seven Greek vowels had to be represented by only three in Arabic -- and these three had then to be accommodated to the five Latin vowels. Deformations were bound to occur. Words had to

be supplied where none existed before; the obvious solution was to adopt the Arabic expression outright. Some of these words were the same as had been borrowed from the Greeks centuries before but which, under the influence of constant use, had been pressed through an Arabic mold. It was typical of scientific translation, those of Ripoll in the tenth century as well as the vastly more polished ones of Alfonso the Wise, that scientific narrative was larded with Arabic terms describing (1) instruments unknown in the Latin West or which had not been known in classical antiquity; (2) concepts which had been introduced into the corpus by the Arabs; and (3) descriptive names, such as those of stars and planets, which represented newly observed data. Larding with Arabic terms, typical particularly of the earlier phases of the translation movement, simply reflected the lack of cognate terms or concepts in the Latin tradition.

In later times, other problems arose, as the two cultures grew more familiar with one another, but were still unable to bridge semantic gaps. The early translators tended to maintain the grammatical structure of [274] Arabic intact in translations which were overly literal. (This explains how modern scholars are able to reconstruct lost Arabic originals from clumsy Latin translations.) An example of literalism is John of Seville's uniform translation of the Arabic preposition *min* by Latin *ex*. Both the Arabic and the Latin words certainly do mean "from," but the Arabic word has a variety of other senses (cause, relationship, etc.) and the result is translations at times baffling to the reader. Lemay, who provides this example, identifies such confusion with John's struggle to master a linguistic structure vastly different from his maternal Semitic one.⁽³⁸⁾ The point could be made more generally: the radical difference between Romance and Semitic language groups caused inherent semantic problems in the process of translation.

The Alfonsine translators who were able on the whole to overcome the trammels of literalism (if they had not, they would have been unable to effect the creation of Castilian scientific prose, which was one of their major achievements) still were unable to escape certain semantic difficulties caused by a lack in Latin or Romance of abstract nouns so easily formed in the Semitic languages. In the Alfonsine works romance suffixes were freely used to create new nouns of abstraction. For the most part, such clumsy neologisms (Millás mentions *ascensionario*, *circulario*, *appositario*) did not pass into common usage.⁽³⁹⁾ But who can doubt that this process represented a stage in the maturation of Spanish Christian thought, whereby it became possible to encompass theoretical abstractions of scientific provenance within the structure of the Castilian language and mind?

The translators were, on the whole, scrupulous in their fidelity to the Arabic text, in keeping with the norms of literalism established by Boethius, who demanded a precise, word for word (*verbo ad verbum*) rendition.⁽⁴⁰⁾ John of Seville was explicit about his task; he seems to have been aware of the mechanisms, function, and traditions of translating. He states that he does not always translate literally but attempts to do equal justice to both the meaning and the letter. All scholars who were translators (*ornnes sapientes qui fuere interpretes*, indicating, I think, the notion that the two activities -- scholarship and translation -- were closely intertwined) have done the same. In most instances, John avers that he has translated literally, lest he stray too far from the way of truth.⁽⁴¹⁾

The mode of translation, with its slavish devotion to the text, as well as the choice of subjects translated, responded to the specific tastes and [275] demands of the scholarly community. The Arabs, as inheritors of the classical tradition, were accorded the veneration owing to Greek and Latin authorities (although not without ambivalence -- some translators decried the prolixity of Arabic style, while Arnald of Vilanova freely altered ibn Rushd's ideas in order to defeat them and decried the dependence of Christian upon infidel scholarship).⁽⁴²⁾ Western scholars were first interested in the more practical sciences: astronomy (with its calendrical and navigational uses), astrology, geometry, mathematics. Only later were philosophical subjects translated.⁽⁴³⁾

Not only was information belonging to discrete sciences transmitted, but also a system of arranging these data and viewing them as parts of an interrelated scheme. Therefore, as Richard McKeon asserts, the impact of scientific diffusion not only encompassed the sum of discrete elements transmitted but involved as well "the rearrangement of schemata which they shared and the modification of the data, methods, and truths organized in those schemata to new specifications and evidence."⁽⁴⁴⁾ Here McKeon has in mind the modification of the structure of the Latin encyclopedia in consonance with norms elaborated in the Arabic encyclopedia. The emphasis was shifted from the significance of words (as in the *Etymologies* of Isidore of Seville) to the things described, thereby enlarging the explanatory horizons of the sciences through the infusion of new data, new methods, and an encompassing framework which stressed systematic research. Facts which had appeared in atomized form in the Latin encyclopedia could now be grouped within a structure under the norms transmitted from the Arabic encyclopedia.⁽⁴⁵⁾

A case in point is Gundisalvo's *De divisiones philosophiae*, which was instrumental in diffusing al-Fârâbî's classification of the sciences in the West. This was not a simple translation on Gundisalvo's part but a recasting of the received structure of the sciences in the Western tradition to open it up to the inclusion of new disciplines. Following Fârâbî, he included mathematics within the theoretical, rather than practical, sciences and then divided it into seven arts (one of which was geometry), each subdivided into theoretical and practical components. Practical geometry, in turn, was itself divided into three varieties, altimetry, planimetry, and cosimetry -- responding to the increasingly complex and specialized methodological and theoretical needs of astronomers, navigators, surveyors, master masons, and so forth.⁽⁴⁶⁾ Where only one science had previously [276] existed, a multiplicity now sprang up, as the classical quadrivium became too restrictive a framework within which to fit a proliferation of new specialties.

The distinct impression that one receives from viewing medieval science at the crossroads of civilization is that, in spite of the divergence in cultural values alleged to have divided Christendom from Islam, these values were considerably less divergent than is generally supposed. Perhaps science is less hermetical and more "international" than other areas of culture. Historians of science would certainly have us believe that to be the case. But I doubt that this is true and that science is less inflected with distinctive cultural variations than is, say, art. Scholarly tradition has it that way, as well as the internal traditions of the scientific disciplines.

The preceding discussions of technology and science are sufficient to illustrate the complex patterns of cultural diffusion in early medieval Spain. Similar patterns could be established for art, architecture, or literature, manifesting analogous mechanisms and processes of transmission.

Notes for Chapter 8

1. The point is well made by Maurice P. Crosland, *Historical Studies in the Language of Chemistry* (Cambridge, Mass.: Harvard University Press, 1962), p. 56.

2. See Millás, *Assaig*, and his other articles cited below, n. 5.

3. G. E. von Grunebaum, "Muslim World View and Muslim Science," in *Islam: Essays in the Nature and Growth of a Cultural Tradition* (New York: Barnes and Noble, 1961), p. 114; Richard Lemay, *Abû Ma'shar and Latin Aristotelianism in the Twelfth Century* (Beirut: American University, 1962), p. 641. For Castro's views, see n. 6 below.

4. For the general point, see Carolly Erikson, *The Medieval Vision: Essays in History and Perception* (New York: Oxford University Press, 1976), p. 10. I am indebted to Professor Nancy Roelker for this reference, as well as for a perceptive evaluation of the relationship between medieval science and general culture.

5. J. M. Millás Vallicrosa, "La introducción del cuadrante con cursor en Europa," p.98; "Translations of Oriental Scientific Works (to the End of the Thirteenth Century)," in Métraux and Crouzet, *The Evolution of Science*, pp. 139-143; "Valoración de la cultura románica en la época de Santa Maria de Ripoll," *Estudios*, p. 53.

6. Américo Castro, *The Spaniards*, p. 573. The notion derives ultimately from Castro's reading of Charles Haskins, *The Renaissance of the Twelfth Century* (Cambridge, Mass., 1933) (see *The Spaniards*, p. 519 n. 11), which reflected only embryonic research in medieval Spanish science. See also Vicente Cantarino, "Sobre los españoles y cómo llegaron a serlo," *Revista Hispánica Moderna*, 34 (1968), 224, echoing the same passage in Haskins which has evidently become an *obiter dictum*.

7. Sâid al-Andalusî, *Kitâb tabakât al-umam (Lizre des Catégories des Nations)*, Régis Blachère, trans. (Paris: Larose, 1935), pp. 46, 51, 131, 135.

8. On Islamic ambivalence regarding Hellenic norms, see Cesar E. Dubler, *La 'Materia Médica' de Dioscorides. Transmisión medieval y renacentista*, 6 vols. (Barcelona, 1953-1959), I: 48. For examples of differential rates of diffusion, Vernet, "La ciencia en Islam y occidente," pp. 544-551. On the institutional demand for innovation in algebra, Roshdi Rashed, "Recommencements de l'algèbre aux XIe et XIIe siècles," in John E. Murdoch and Edith

D. Sylla, eds., *The Cultural Context of Medieval Learning* (Dordrecht: D. Reidel, 1975), pp. 43, 54-55, 58. On barriers affecting the diffusion of Indian numerals, Goitein, *Mediterranean Society*, I: 209; A. I. Sabra, "Ilm al-hisâb," *EI*², III: 1140. On Battânî, W. Hartner, "al-Battânî," *DSB*, I: 512.

9. On Maslama's school, see Sâ'id, *Tabakât al-umam*, pp. 129-138; Millás Vallicrosa, "Carácteres de la ciencia hispanoárabe," *Estudios sobre historia de la ciencia española*, pp. 28-29; Juan Vernet and M. A. Catalá, "Las obras matemáticas de Maslama de Madrid," *Al-Andalus*, 30 (1965), 21-22. On 'Abd Allah b. Ahmad, Verner, "El Valle del Ebro como nexo entre Oriente y Occidente," *Boletín de la Real Academia de Buenas Letras de Barcelona*, 23 (1950), 268; Millás, "Carácteres," p. 30.

10. On the personal network of the agronomists, see G. S. Colin, "Filâaha," *EI*², II: 901-902; Lucie Bolens, *Les méthodes culturales au moyen-âge d'après les traités d'agronomie andalous: Traditions et techniques* (Geneva: Editions Médecine et Hygiène, 1974), pp. 21-32; Millás Vallicrosa, "Sobre la obra de agricultura de Ibn Bassâl," pp. 132-133, and *Ciencia geopónica*, pp. 41-42.

11. George Hourani, "The Early Growth of the Secular Sciences in Andalusia," *Studia Islamica*, 32 (1970), 155-156 (extract from ibn Juljul on the translation of Dioscorides); Dubler, '*Materia Médica*' de Dioscorides, I: 50-51; Juan Verner, "al-Majritî," *DSB*, IX: 39.

12. Richard Lemay, "Dans l'Espagne du XIIe siècle: Les traductions de l'Arabe au Latin," *Annales*, 18 (1963), 647-649. Lemay's sociological perceptions are insightful and valid, but I agree with C. Sánchez-Albornoz that he fails to prove his contention that John of Seville was the same person as John of Toledo and John ibn Dâwûd; "Observaciones a unas páginas de Lemay sobre los traductores toledanos," *Cuadernos de Historia de España*, 41-42 (1965), 313-324.

13. Lynn Thorndike, "John of Seville," *Speculum*, 34 (1959), 22 n. 10: "Habetis ergo librum vobis precipiente et me singula verba vulgariter proferente et Dominico archidiacono singula in latinum convertente ex arabico translatum."

14. J. M. Millás Vallicrosa, "El literalismo de los traductores de la corte de Alfonso el Sabio," in *Estudios sobre historia de la ciencia española*, p. 356. Gonzalo Menéndez Pidal states that when the translator from Arabic was a Jew, the other member of the team had to be a Christian because Jews spoke an archaic dialect; "Cómo trabajaron las escuelas alfonsíes," *Nueva Revista de Filología Hispánica*, 5 (1951), 367. See also Castro, *The Spaniards*, p. 561. R. Menéndez Pidal sees the role of the Jews in the formation of literary Castilian as a more or less adventitious intrusion into a normal process of secularization; *España, eslabón entre la cristiandad y el Islam* (Madrid: Espasa-Calpe, 1956), pp. 52-53- Jews had played a similar polycultural role in al-Andalus, as when ibn Buklârish of Zaragoza composed tables of synonyms, including Romance variants, of different simples; Dubler, '*Materia Médica*' de Dioscorides, I:52. Marcel Destombes points out that Andalusí Jews, when migrating to Christian Spain, played a role in the diffusion of Islamic scientific instruments; when they made instruments, they did not use Hebrew letters but formed them in Latin or had them translated (there is no case for aversion to Latin here); "La diffusion des instruments

scientifiques du haut moyen âge au XVe siècle," *Cahiers d'Histoire Mondiale*, 10 (1966-67), 50-51.

15. Juan Verner, "Ibn Djudjul," *IE*², III: 755; Sâ'id al-Andalusî, *Tabakât al-umam*, pp. 143-145; Ch. Pellat, "Arîb b. Sa'd al-Kâtib al-Kurtubî," *IE*², I: 628.

16. Makkî, *Aportaciones orientales*, p. 280. See the discussion of scholarly travel in Chapter 9, below.

17. B. Lewin, "Adwiya," *IE*², I: 214; E. Lévi-Provençal, "Abbâ b. Firnâ," *ibid.*, I: 11 (the story is alternatively told about 'Abbâs b. Nâsih); Vernet, "Valle del Ebro," p. 272; Bolens, *Méthodes culturelles*, p. 24; S. M. Stern, "Abû'l-Salt Umayya al-Andalusî," *IE*², I:149; Needham, *Science and Civilisation in China*, I: 218.

18. Menéndez Pidal cited in Castro, *The Spaniards*, p. 561; Thorndike, "John of Seville," p. 25; G. Menéndez Pidal, "Cómo trabajaron las escuelas alfonsíes," pp.373-374.

19. Lemay, *Abû Ma'shar*, pp. xxiii, 48-50; see also Erikson, *The Medieval Vision*, pp. 24-27.

20. Samuel M. Waxman, *Chapters on Magic in Spanish Literature* (Extrait de la *Revue Hispanique* vol. 38) (New York-Paris, 1916), pp. 2, 19, 26.

21. The episode from Juan Manuel is from *El Conde Lucanor*, exemplo XI (cited by Waxman, *Chapters on Magic*, p. 28): the Dean "avia muy grant talante de saber el arte de la nigromancia. Et oyo dezir que don Yllan de Toledo sabia ende mas que ninguno que fuese en aquella sazón. Et porende vinose para Toledo para aprender de aquella sciencia."

22. Menéndez Pidal, *España, eslabón*, p. 33; Waxman, "Chapters on Magic," p. 5.

23. Waxman, "Chapters on Magic," p. 25; Sánchez-Albornoz, "Observaciones a unas páginas de Lemay," p. 324: "In arte magica et scientia Astrologie, philosophis hispanis peritores paucissimi extiterunt, sicut declarant libri et Tabule toletane ubi fere omnes libri philosophici sunt translati de arabico in latinum. Johannes igitur Hispalensis et alii quam plures Hispalim et Murcie in astrologia peritissimi extiterunt." Murcia, both in Islamic and Christian times, appears to have been a scientific satellite of Toledo. One of al-Zarqâl's disciples practiced astronomy there; see Millás Vallicrosa, *Estudios sobre Azarquiel*, p. 14. After its conquest in the thirteenth century, Murcia became a center of Arabic language study.

24. Juan A. Paniagua, *El maestro Arnau de Vilanova, médico* (Valencia: Catedra de Historia de la Medicina, 1969), p. 70: "nos in lingua arabum legisse recolimus totam nigromantie fatuitatis doctrinam."

25. Huici Miranda, *Cocina hispano-magribi*, pp. 8i-82; Alfonso X, *Lapidario*, pp. 9-10.

26. Bolens, *Méthodes culturelles*, pp. 34-39, 44-49, 58, 88, 189, 192, 200, 218-219.

27. On Islamic astronomy generally, see D. Pingree, "'Ilm al-Hay'a," *EI*², III: 1135-1138; Thomas S. Kuhn, *The Copernican Revolution* (Cambridge, Mass.: Harvard University Press, 1957), p. 270; E. S. Kennedy, "A Survey of Islamic Astronomical Tables," *Transactions of the American Philosophical Society*, New Ser., 46 (1956), 123-177.

28. Kennedy, "Islamic Astronomical Tables," p. 168.

29. G. J. Toomer, "al-Khwarizmî," *DSB*, VII: 358-365; Hartner, "al-Battânî," pp. 507-516; Lemay, "Traductions de l'arabe," p. 645; Charles H. Haskins, *Studies in the History of Mediaeval Science* (1924), reprint ed. (New York: Ungar, 1960), pp. 115-117; John E. Keller, *Alfonso X, el Sabio* (New York: Twayne, 1967), p. 137; Francisco Cantera Burgos, *Abraham Zacut* (Madrid: Aguilar, n.d.), pp. 51-52, 78-79; J. H. Parry, *The Age of Reconnaissance* (New York: Mentor, 1964), pp. 110-111. On the "Toletan observations" (*al-arsad al-Tulaituliya*) analyzed by al-Zarqâl, see Kennedy, "Islamic Astronomical Tables," pp. 128-129; Millás, *Estudios sobre Azarquiel*, pp. 4, 34, 71, 364.

30. W. Hartner, "Asturlâb," *EI*², I: 722-728; Millás, "Introducción del cuadrante con cursor"; Destombes, "Diffusion des instruments scientifiques," pp. 36-38, 41; White, *Medieval Technology and Social Change*, p. 123; Salvador García Franco, *Catálogo crítico de astrolabios existentes en España* (Madrid: C.S.I.C., 1945); Needham, *Science and Civilisation in China*, III: 340.

31. José A. Sánchez Pérez, "El Libro de las Cruces," *Isis*, 14 (1930), 78, 124, 127; J. M. Millás Vallicrosa, "Sobre el autor del 'Libro de las Cruces,'" *Al-Andalus*, 5 (1940), 230-234.

32. Charles Pellat, "Anwâ'," *EI*², I: 523-524; *idem*, ed., *Le Calendrier de Cordoue* Leiden: E. J. Brill, 1961).

33. Shlomo Pines, "Ibn Bâjja," *DSB*, I: 409-410; J. Vernet, "al-Bitrûdjî," *EI*², I: 1250; Roger Arnaldez and Albert Z. Iskander, "Ibn Rushd," *DSB*, XII: 1-9; and George F. Hourani, "Ibn Tufayl," *ibid.*, XIII: 188-189.

34. Richard Lemay, "The Hispanic Origin of our Present Numeral Forms," *Viator*, 8 (1977), 435-462; Gonzalo Menéndez Pidal, "Los llamados numerales árabes en occidente," *Boletín de la Real Academia de Historia*, 145 (1959), 179-208. See also S. Gandz, "The Origin of Ghubâr Numerals," *Isis*, 16 (1931), 393-424; Sabra, "'Ilm al-hisâb," 1138-1141; and Thorndike, "John of Seville," p. 35.

35. Steele, "Practical Chemistry in the Twelfth Century"; E. J. Holmyard, "Maslama al-Majrîrî and the Rutbatu'l-Hakîm," *Isis*, 6 (1924), 293-305; Crosland, *Historical Studies*, pp. 6, 14; Vernet, *Historia de la ciencia española*, p. 102. On the economic significance of cupellation, see E. Ashtor, *A Social and Economic History of the Near East in the Middle Ages* (Berkeley: University of California Press, 1976), p. 86.

36. Crosland, *Historical Studies*, pp. 51, 53-54.

37. Arnald of Vilanova, *Aphorismi de gradibus*, Michael R. McVaugh, ed. (Granada-Barcelona: Seminario de Historia de la Medicina, 1975), pp. 4, 22, 36–38, 56–57, 78, 81, 82, 86, 87, 91–92, 105. On Arnald as a translator from Arabic, see also Paniagua, *Arnau de Vilanova, médico*, pp. 3–4.

38. Lemay, *Abûi Ma'shar*, pp. 25, 26n.

39. Millás, "El literalismo de los traductores de la Corte de Alfonso el Sabio," pp. 349–358; "Valoración de la cultura romanica," p. 57.

40. Lemay, *Abûi Ma'shar*, p. 21.

41. Thorndike, "John of Seville," p. 26 (paraphrased from Thorndike's translation); also, Lemay, *Abû Ma'shar*, pp. 27–28.

42. Lemay, *Abû Ma'shar*, p. 21; McVaugh, ed., *Aphorismi de gradibus*, pp. 113–115.

43. See Lemay, "Traductions de l'arabe," p. 656, on changing interests of the translation movement. Vernet, *Historia de la ciencia española*, p. 77, gives a statistical breakdown of translations by discipline.

44. Richard McKeon, "The Organization of Sciences and the Relations of Cultures in the Twelfth and Thirteenth Centuries," in Murdoch and Sylla, eds., *The Cultural Context of Medieval Learning*, p. 157.

45. *Ibid.*, pp. 183–187. McKeon is insistent that modern science emerged in the West only through contact with the Arabic tradition, the movement of translation causing an explosive reaction in twelfth- and thirteenth-century Europe.

46. Lon R. Shelby, "The Geometrical Knowledge of Mediaeval Master Masons," *Speculum*, 47 (1972), 402–403. On Fârâbî's analogous impact on medicine, see Heinrich Schipperges, "Las escuelas de Toledo y su significación para la ciencia occidental," *Archivo Iberoamericano de Historia de la Medicina*, 13 (1961), p. 48.

CULTURAL PROCESS IN MEDIEVAL SPAIN

1. The Linguistic Model and Cultural Continuity

[277] To take linguistic change as a model for cultural change in general is wholly appropriate. The contact of two different languages provides a microcosm of the contact of cultures. One notes a range of effects, from profound to superficial, depending upon factors intervening in specific phenomena (syntax, phonetics, vocabulary), as well as mechanisms accounting for the contours of selectivity in each area. Linguistics and philology provide a methodology for tracing the history of such changes and of assessing the impact of culture contact in an accurate way, sometimes even quantitatively.

Virtually all the models generated for explaining cultural change in medieval Spain have come from the field of comparative philology. Particularly influential has been the concept of the linguistic substrate, used as a heuristic device to account for the survival in the language of archaic elements of diverse provenance. The concept has been extended to provide a general mechanism for analyzing contents of Spanish culture as the product of the historical succession of cultures. The concept of the substrate makes clear that this is a cumulative, selective process—which is undeniable—but the geological metaphor has had unfortunate consequences because the implicit geological processes have no cultural analogues.

The notion of the substrate is something akin to the onion-skin view of geology: that if one peels layers off the surface, one finds a series of distinctive strata beneath. If a layer is peeled off partially, selectively, as if by erosion, portions of underlying layers will be visible from the surface. The problem is that there is no process of cultural change analogous to erosion. Thus the concept has not only fitted in well with arguments (such as Sánchez-Albornoz's "temperamental inheritance") of a genetic nature, but can also be used by those who reject the racist bias of the genetic argument but whose theory of culture is more or less the same. The fallacy of the geological model is that there is no cultural bedrock, no steady-state culture. Culture is always changing and transmuting itself [278] by dropping old elements, elaborating new ones, or by conjoining traits in different ways. The geological metaphor implying that a people can dig down, as it were, through the surface of its own culture and find the bedrock, or that there will be outcroppings of original, bedrock culture sticking up among superficial upper layers, is an inexact model of cultural change.

The model was originally designed, and most accurately used, for the purpose of explaining relationships between linguistic phenomena bearing the imprint of cultural succession. Perhaps the best-known example is the inhibiting effect exerted by Cantabro-Basque linguistic structure upon the Latin initial *f*-. Its disappearance in Castilian is attributed to the substratic action of the Basque language. The substrate is thus seen as

inhibiting one element in the process of Romanization and as encouraging the future evolution of Castilian Romance in a particular direction. When molded into a theory of general cultural action, the result is a very conservative view of cultural change. For example, J. A. Maravall (building upon Amado Alonso's definition of substratic action) notes that "when the language of an invading people dominates that of the conquered, it happens that in the evolution of the latter there will appear laws of change (phonetic, lexicographic, syntactic) which respond to the characteristics of the language which has disappeared. Thus when Mozarab population decays, eliminated by the Hispano-Muslims or absorbed by the Christians of the north, in the history of the latter tendencies shoot up which are rooted in that primitive stratum (*capa*), whose civilization, whose historical concepts, had been stifled." He goes on to explain that the stratum in question was basically Hispano-Roman upon which had fallen a relatively weak German superstrate. Indeed, the survival of Latin proves the great influence of this substrate, which would exercise "a later and decisive action" upon the Romanic-European civilization of the Christian principalities of northern Spain. Such action explains not only the distribution of Germanic and Roman toponyms, for example, but also the preservation of social rules later codified in the *Fueros*. This, Maravall associates with Menéndez Pidal's concept of cultural latency.⁽¹⁾

The notion that cultural bedrock can intrude at any moment through a superficial superstrate is similar to Sánchez-Albornoz's likening of culture to an incompletely expressed phenotype, an analogy which fails because, just as there is no bedrock specific to a given culture, there is no cultural genotype. Yet this construction has had enormous influence upon [279] historians and persists as a kind of reductionist argument, to explain the unexplainable by allusion to a more or less remote substrate. To this is added the valuative problem of determining just which substrate is exercising control. To Maravall, it is the Hispano-Roman. For Sánchez-Albornoz, it is essentially Visigothic, at least insofar as law and institutions are concerned, although -- as noted -- he holds psychological traits as constant, virtually from prehistoric times.⁽²⁾ For Pierre Bonnassie, culture of the mountain dwellers of the eastern Pyrenees prior to A.D. 1000 was explicable in terms of pre-Roman and even pre-Celtic foundations, which crop up "in the archaism of a language still influenced by the Basquoid substrate, the maintenance of pre-Christian beliefs," and in elements of Roman and Visigothic law.⁽³⁾ For Lucie Bolens, dealing with Andalusí culture, the significant substrate is a Punic one, an argument which has become almost traditional in Spanish Arabism, and which recurs in Arnold Toynbee's notion of the Arab-Berber retrieval of Spain for Syriac society, a retrieval because in this view Iberia had once been Punic -- an argument which is so hyperbolic and indemonstrable that it needs no refutation, the more so since its partisans offer no proof. Thus Bolens argues that Berber influence attenuated the orientalization of al-Andalus and reinforced the Celtiberian base of its culture.⁽⁴⁾ This is tantamount to saying that if the United States were conquered by China the oriental traits of American Indians (whose ancestors crossed the Bering Strait in some distant millennium, but no more distant than Celtiberian times perhaps) would thereby be supported and Asiatic culture strengthened.

This kind of argument is easy to make because, first, the structural impossibility of a remote substrate manifesting dominance over a series of diachronic cultural boundaries means that no proof of these contentions will ever be forthcoming, and hence no

refutations can be offered. Iberian allusions are particularly safe inasmuch as the time is so remote and the state of knowledge so fragmentary that it can explain either everything or nothing. Second, as Guichard wisely notes, many elements identified by historians as "Hispanic" customs dating to one substrate or another are in fact Mediterranean traits widely diffused throughout the entire basin.⁽⁵⁾

Once a theory of substratic action is accepted, other forms of cultural explanation are virtually excluded. A few examples of how the substrate defeats other kinds of explanation will suffice. Sánchez-Albornoz and his school claim that in view of the subsistence of Hispano-Roman culture [280] among Neo-Muslims the latter could not have transmitted elements of Eastern culture to the Christian north. We have already noted the insubstantiality of this line of reasoning. It is also used to explain how the Mozarabs were unable to transmit to northern Christians styles of life or thought foreign to themselves. Proof of this, according to Hilda Grassotti, is the "non-conformity" of Mozarabs, an attitude proved by their migration. Here, non-conformity is a social characteristic from which a cultural deduction is made: the more Christian, the less Arabized. The supposed lack of acculturation is the obverse, and therefore a proof of, the persistence of a Hispano-Gothic substrate.⁽⁶⁾ But, of course, partially or even minimally acculturated groups can well serve as agents of diffusion. Were it not so, the histories of art, science, or technology in Christian Spain would be unintelligible.

The substrate, I would suggest, had best be limited to explaining individual traits, without attempting to cross too many diachronic boundaries. It is a valuable tool of philological explanation and can fruitfully be extended to other areas of culture, particularly those where the elements in question are palpable, such as technology. Martínez Ruíz's study of the Berber plow, associating some elements with a Roman substrate, others with an Arab adstrate, is an excellent example.⁽⁷⁾ But as a model for explaining modal personality or even the broad characteristics of Spanish culture at any given period, it clearly is insufficient and inexact. Américo Castro was correct when he said that the provenance of individual traits is basically irrelevant to their integration within a living culture.⁽⁸⁾ Indeed, trait analysis yields an atomized view of culture. That is why Castro invented the *morada vital* ("dwelling place of life") to supply a context for understanding the linkages between traits. In reality, these linkages are provided by the dominant value systems (e.g., Islam, Christianity, "feudalism," etc.) which provide contexts for integrating elements of disparate origin.

The notion of the substrate also implies that cultures defined in so lapidary a form ceased to exist at a precise moment in time, the moment when the next stratum was laid down (by invasion). Obviously, cultural change is a more complex process. Cultural continuity occurs, but within bounds that must be defined. Linguistic changes are significant as general benchmarks and form the most obvious boundaries between a succession of cultures in a given historical sequence: e.g., Celtiberian, Roman, Visigothic, Spanish. But the periodization and parameters of [281] continuity differ for each family of traits. Thus technological continuity was broken, not by the process of Romanization, but by the economic and social upheaval of late Roman times.

2. Cultural Crystallization

Another philological concept which has had extraordinary resonance in recent historiography (primarily through Américo Castro's work) is the notion of competition between variant norms. This is the basis of Castro's explanatory system, the germ for which is found in the thought of Ramón Menéndez Pidal. Menéndez Pidal noted that "the coexistence (*convivencia*) of many norms which struggle among themselves with very comparable forces" is characteristic of pre-literary epochs, those periods in which cultures are in a stage of crystallization.⁽⁹⁾ That Castro makes *convivencia* the primary mechanism of cultural interchange is, I think, prefigured in Menéndez Pidal's very similar, but more restricted, use of the same word.

Again, the notion of the coexistence and competition between norms has much higher explanatory value when restricted to linguistic phenomena than when extended to encompass the whole of culture. In Castro's usage, *convivencia* becomes a catch-all mechanism used to explain all phenomena of cultural change contingent upon the contact of cultures, an inclusivity which obscures what are in reality a number of different mechanisms.

In the historiography of Christian Spain, emphasis has been placed upon related processes of ethnic, linguistic, and political differentiation between the various groups of northern Christians. These processes were first described by philologists. Menéndez Pidal pointed out that Castile "was defining itself from the tenth century on."⁽¹⁰⁾ The central feature of this process, to the linguist, seemed to be the apparent decisiveness of Castilians in resolving linguistic ambiguities characteristic of the speech of their neighbors. Psychological inferences were soon read into this Castilian "decisiveness," but the exaggerations of philologists ought not to detract from what this process represented: the emergence of an ethnic community, with group awareness, which soon found political expression (in the emergence of the county and kingdom; in border skirmishes with Leonese and Navarrese, etc.). Analogous processes characterized all of the Christian kingdoms: ethnic reference crystallized in regional foci, [282] although each shared in common with the others the superethnic adscription of "Christian" in contradistinction to Muslims.

The crystallization of a distinctively Andalusí Islamic culture was ultimately dependent upon the process of conversion. As a progressively higher proportion of the population became Muslim, institutions and activities of Islamic orientation came to dominate the culture. Since such activities were predicated upon a certain density of Muslims, these are also benchmarks in the process of crystallization and serve as an indirect check on the progress of the conversion movement. In this light one can point to such phenomena as the establishment of an Andalusí school of *hadīth* and *fiqh*, the gradual slowing down of the current of scholarly travel eastward as religious networks at home became thick enough to supply high-quality teachers; the severing of the Jewish community's ties to Babylonian (Iraqi) Jewry in the mid-tenth century; the emergence of Andalusí scientific schools in the eleventh; the compilations (*ḍiwāns*) of works of Andalusí poets in the eleventh and twelfth centuries; the demand in the East for Andalusí scholars to teach there -- all of these are indicative of growing cultural cohesion and of the elaboration of self-perpetuating cultural norms.⁽¹¹⁾ Similar processes characterized the other emergent nations of the Islamic world.

According to Bulliet's data, al-Andalus underwent a conversion process identical to that in other areas, offset by about one hundred years owing to the lateness of the conquest (see Figure 7).

The history of the Arabic language in al-Andalus also bears out the general trend described above. Here one must distinguish between two distinct, although related, phenomena: the progressive Arabization of the population, a process not completed until the thirteenth century, and the emergence of a standard, colloquial Spanish Arabic as a distinctive dialect within the Arabic-speaking world. This last process was completed by the tenth century. Although Andalusī Arabic had regional nuances, it had a common core which betrayed the historical circumstances in which it emerged. The contact between Arabic and Romance phonemic systems produced a number of distinctive elements. Because of Romance influence, Spanish Arabic was one of a number of Arabic regional dialects where the *p* (a sound generally transcribed in Arabic with the symbol either for *f* or *b*) attained full phonemic status. Phonemic stress was substituted for vowel length; the particle *li* was used to mark accusatives, parallel to the Romance *a*; and the diglossia between [282] classical and colloquial Arabic together with Arabic/Romance bilingualism combined to produce sentence structure and word order which were much freer than those of classical Arabic. The selectivity of this process is apparent. Syntactical interference from Romance was pronounced, but morphological interference was minimal, due to the extreme structural dissimilarity (anisomorphism) between Romance and Semitic language groups.⁽¹²⁾

The process of cultural differentiation that was taking place was noted at the time. According to Federico Corriente, speakers of Spanish Arabic "were aware of the personality of their dialect and not a bit ashamed of it" and preferred it to classical Arabic for certain literary genres.⁽¹³⁾ To foreigners, Andalusī Arabic seemed impure. A Bedouin in the service of Ibrāhīm ibn al-Hajjāj of Seville in the ninth century complained that his speech had been corrupted by Andalusī vulgarisms. There are further complaints, from the eleventh century, about Andalusīs who spoke Arabic imperfectly, but these ought to be viewed not so much as a comment on the quality of Andalusī culture as the realization that specific forms [284] of linguistic expression had evolved there. There was no correlation between good Arabic and Arabic ethnicity, incidentally. As Makkī notes, Neo-Muslims were interested in improving their Arabic. Such a man as 'Abd Allāh ibn 'Umar (d. 889) of Seville spoke Arabic beautifully, while detesting Arabs.⁽¹⁴⁾

As in the Romance languages, there was a process of the sorting out of competing norms. In this light, al-Tīfāshī, a Magribī writer of the twelfth century, noted that "of old the singing style of the people of al-Andalus was either according to the style of the Christians, or else according to that of Arabic camel-drivers, without their having norms to guide them until the establishment of the Umayyad dynasty." Standardization occurred precisely during the reign of 'Abd al-Rahmān II when Ziryāb and other singers imposed the Iraqi style.⁽¹⁵⁾ A further sign of crystallization was the emergence of distinct regional foci, areas of cultural subdifferentiation within a broader Andalusī Islamic culture. Thus Urvoy detects regional nuances which, if they appear hazy from the perspective of the present, give evidence of cultural differentiation at the regional level: western al-Andalus was less intellectually and religiously vital than the peninsular east; the Middle March, an advanced strategic zone, was the focus of an accentuated juridical orientation; the Upper March

(Ebro) became progressively more Arabized as it passed from Neo-Muslim to Berber to Arab rule, and in virtue, too, of the strong links the region maintained with the Islamic East. Córdoba was the focus of a region of religious and cultural traditionalism.⁽¹⁶⁾

3. Modalities of Cultural Change

The passage of cultural elements along a spatial trajectory may come about through a variety of means and agents. In some few cases, the mechanism of cultural change may be described as "formal" or institutionalized -- cultural change directed by some institution.⁽¹⁷⁾ Such direction may be applied positively or negatively. An example of the former would be the introduction of Persian-style 'Abbâsid court customs and institutions by the Umayyads under 'Abd al-Rahmân II; of the latter, pressure by government on a religious or ethnic minority to abandon any element of its culture (a phenomenon that became salient in Christian Spain in the later middle ages), incentives for conversion, and so forth. But the preponderance of cultural changes come about through non-formal [285] mechanisms: the migration of peoples, the conductivity of merchants, travellers, books, or whatever channels of communication of information that may have existed. There was always a selective factor: not all innovations offered by the "donor" culture were accepted by the "recipient" culture. The factors influencing selectivity were varied: economic demand, the market for stylistic innovation, a desire for new knowledge all contributed to climates favorable to innovation; hostility, warfare, and religious difference contributed to a climate that may have been inimical to borrowing, but only selectively so. Sánchez-Albornoz's "antibiosis" is in fact a common context of cultural borrowing: competition with an enemy can be a powerful stimulus to cultural innovation. If the barrier is strong enough, such imitation may not be consciously acknowledged; rather, a process of reinvention may take place within the recipient culture. This is what A. L. Kroeber called "stimulus diffusion," and a good example is the borrowing by Christians of the Islamic *ribât*, or frontier fighting "monastery," and its reinvention as the crusading military order.⁽¹⁸⁾

Next to migration, travel was perhaps the best-defined agency of cultural diffusion. The introduction of eastern customs was the result of a steady movement of travellers, typically from al-Andalus eastward in the first two centuries of Islamic rule, from east to west in later centuries and, throughout, a dense pattern of interaction between al-Andalus and the Magrib, particularly within the sphere of influence of Fez.

Travel to the East was very common among Andalusí *fuqahâ'*, especially during the first two centuries of Islamic rule. It was typical to read in a biographical account that a man had travelled in the lands of the East (*tâfa bilâd al-mashriq*) and that he had done so "in search of knowledge" (*iftalab al-'ilm*). To a certain extent, the pilgrimage destination of Mecca determined the places visited (e.g., Qayrawân, Alexandria, Cairo, all places with scholarly communities), but the search for specialized knowledge deflected scholars to, for example, Basra and other Iraqi centers to study grammar. (A similar pattern held for Jewish pilgrims, whose destination was Jerusalem, however.) The number of people making such trips was relatively high: of 246 scholars from the Ebro Valley studied by Juan Vernet, one-quarter had studied in the East.⁽¹⁹⁾

Travel to the East, to be sure, was a necessity in the years before Andalusī educational institutions had reached a density sufficient to support scholarship of high caliber over successive generations. Given this [286] situation, to have an eastern teacher was a way to increase prestige at home. The career of Baqī ibn Makhḷad, a Neo-Muslim traditionist of the ninth century (817-889) is revealing in this regard. He was said to have spent thirty-four years studying with no less than 284 eastern masters (a fact that both reflected his prestige and contributed to it). But it was also said that if a country had such a man as Baqī, then there was no reason for its scholars to travel abroad in search of tradition. A scholar of the next generation, Qāsim ibn Asbagh al-Bayyānī (858-951), was noted as a pole of attraction for indigenous scholars: "towards him were directed the travels of students in al-Andalus" (*wa kānat al-rihla fi'l-Andalus ilayh*). In later times, logically, the pace of travels to the East slowed.⁽²⁰⁾ It never ceased; the pilgrimage ensured its continuance. By the twelfth century, Fez had replaced Qayrawān as a pole of attraction, and the cultural unity of Morocco and al-Andalus was apparent. The numerically most important contacts between Andalusī and Magribī towns during this period are represented in Map 1, compiled on the basis of ibn al-Zubair's mentions of scholars resident in one town reported to have studied in or travelled to another.

We have already noted, particularly with regard to the transmission of science, the pivotal role of Jews in the process of cultural exchange. Jews were frequently bicultural or tricultural and moved between Arabic and Romance cultures with facility. Shifting cultural referents, either by conversion or by migration, Jews were likely both to be receptive to cultural stimuli of different origins and to be able to assess the market for cultural innovation in the host society. Interestingly, Andalusī Jews seemed not to have travelled much to the East for purposes of study -- the result, no doubt, of scholarly traditions already highly developed before the growth of the Jewish community in al-Andalus. Books and scholarly (rabbinical) communications were regularly received from the East, thanks to the coming and going of merchants.⁽²¹⁾

Even highly Arabized Andalusī Jews were able to function in the Romance language. Jewish poets like Yehuda ha-Levi wrote strophic poems in Hebrew with final couplets in Romance, following an Arabic literary convention. Beyond this, the cultural mobility of Jews made them particularly well suited to play the role of cultural broker. An apt example is ibn Buklārish, a Jew from Islamic Zaragoza, who composed tables of Arabic and Romance synonyms of *materia medica*.⁽²²⁾

The ability to judge the market for cultural products was another [288] Jewish hallmark. Jewish instrument-makers residing in Christian Spain, for example, made no scientific instruments bearing Hebrew letters. Rather, they produced Arab-style instruments (like astrolabes) for a Christian market which required Latin instrumentation.⁽²³⁾ Converted Jews were in an even more sensitive position when it came to assessing the cultural needs of their new reference group. Pedro Alfonso, who converted to Christianity in 1106 and was familiar with the Arabic scientific tradition, became a kind of propagandist for Arab science, particularly astronomy; he wished "to raise once more to life the knowledge of that science which is in such a deplorable state among those educated in the Latin manner."⁽²⁴⁾ A converted Jew (who had been a physician trained according to Arabic norms), he was in a position to compare the competing "manners" of education, and to find the Latin one

wanting. Jews, moreover, remained receptive to cross-cultural information in times when the host culture was closing down. Luis García Ballester points out that the winding down of the translation movement severely retarded the transmission of new ideas from Muslims to Christians. Thus the important medical treatise of ibn Zuhr, the *Taysir*, was not known to Spanish Christians until 1281, more than a century after it was written. But it was known to Jews in Barcelona in 1165, four years after ibn Zuhr's death.⁽²⁵⁾

Mozarabs played an analogous role, although less is known of the dimensions of their cultural conductivity. Levi della Vida presumed Andalusí Christians to have been in contact with Nestorian and other eastern communities whose influence was felt in the adoptionist and other heterodox movements. We know there were contacts between Córdoba and Jerusalem, a center of Christian religious opposition to Islam, notably in the person of the monk George, a Jerusalemite executed in Córdoba during the martyrdoms of 852. In contrast to the Jews, who moved in tandem with Arabic culture, Mozarabs appear to have acted almost wholly within a Christian context and to have made few contacts with the secular knowledge of the Islamic world. An exception is the dedication of a treatise on urine by a ninth-century Coptic physician to Khâlid ibn Rûmân, a Mozarab physician from Córdoba.⁽²⁶⁾ Coptic numerals appear in Mozarab manuscripts, and the Calendar of Córdoba also represents some Mozarab participation, via Arabic, in Eastern culture.

Mozarab contacts with the Christian north, not only literary and artistic but also technological, appear to have been important. Eulogius of Córdoba brought books back to al-Andalus from his tour of Pyrenean [289] monasteries in the early ninth century, just as manuscripts originating in Christian scriptoria in Toledo and Córdoba reached the kingdom of Oviedo. These included not only texts of the Visigothic period, but also material of more recent origin, such as the text of the Council of Córdoba, held in 839. Manuscripts continued to arrive from the south throughout the ninth and tenth centuries, following the routes of Mozarab migration to Ripoll in Catalonia and to the Riojan monasteries of Albelda, Cardena, San Millán de la Cogolla, and Silos, heavily Mozarabic centers which became nodes of information exchange between Mozarabic and European culture.⁽²⁷⁾

In a manner functionally similar to the way in which Islamic currents were felt in al-Andalus via Morocco, western European influence impinged upon Christian Spain through France.⁽²⁸⁾ For a time after the Islamic invasion, the flow of ideas from Christian Spain to northern Europe continued to follow the same routes as during Visigothic times, though at a much diminished rate. Materials from the Toletan councils of the late seventh century and monastic rules such as those of San Fructuoso of Braga continued to reach European monastic centers in manuscripts of peninsular origin through the ninth century. In that century also, Gerona was a focus for the diffusion of manuscripts of the Visigothic Laws, in response to demand from "Hispani" settled in the Frankish kingdom, who were allowed to rule themselves according to the old Gothic laws. In the tenth century, the direction of flow changed, the circulation of European material in Spanish monasteries accelerating toward the end of the century. When the Roman rite was introduced, the Christian zone, particularly in the east, was inundated by relevant ecclesiastical literature, according to Manuel Díaz. The fact that the monastery of Ripoll was central in this process

seems to indicate that the general cultural movement paralleled that of scientific activity on the part of Christians.

The fact that the see of Narbonne spanned the Pyrenees ensured that the "Spanish March" would be a center of exchange with Frankish Europe. The monasteries of Ripoll, Cuixá, and Canigou were the leaders in establishing contacts with Europe north of the Loire, the former having established close relations with the monastery of Fleury. In the peninsular west, a similar situation prevailed, thanks not only to the pilgrimage route but also to the fact that the political entity of Navarre also spanned the Pyrenees. In the eleventh century the pace of exchange [290] quickened and it was during this time that the Christian kingdoms, particularly those of the west, made the decisive shift from an Andalusí to a European cultural polarity. The influence of French monks, first from Cluny, later from Cîteaux, was strongly felt. Cluniacs, as summarized by Defourneaux, directed the changeover from Mozarabic to Romanic liturgy, supplied most of the bishops, particularly in reconquered areas (for example, Bernard de Sédillac, first bishop of reconquered Toledo), organized the pilgrimage route, advised kings, and participated in exchanges of Christian and Islamic art and high culture. Just as Ripoll and Cuixá were centers for the reception of Frankish cultural currents in the east, so were San Juan de la Peña in Aragón and Sahagún in Castile-León, the latter with a Cluniac abbot named by Alfonso VI.

Castro noted, correctly in my opinion, that there is no inherent contradiction in the simultaneous action of Islamic and non-Islamic models, even upon the same phenomenon. Thus the military orders could both assume a French economic and political structure but be implanted in an Islamic-style value system which made a sacred duty of fighting for the faith. Sánchez-Albornoz, in fact, makes the same point, regarding kingship in León; the notion of a territorial kingship (*regalia territorial*), though inherited from the Visigothic juridical tradition was nevertheless reinforced by the example of Islamic norms prevalent in al-Andalus.⁽²⁹⁾

4. Balance-Sheet of Cultural Exchange

The preceding observations provide a basis for a rational evaluation of cultural exchange. In this concluding section, I will confine myself largely to a discussion of Américo Castro's ideas, with some additional observations as a gloss upon them. Castro's critique of traditional Spanish historiography is directed at the notion that Spanish culture has fixed characteristics which have remained constant from the time of the Iberians to the present. This fallacy he labels "pan-Hispanism" since it attributes "Spanish" characteristics to all groups which have inhabited the Iberian peninsula. Castro's reply to this generalization is that the culture we call Spanish is not an eternal entity, but one which came into being in the centuries following the Islamic invasion of 711. That culture was one whose idiosyncrasies can be explained by reference to the interaction of Muslims, Christians, and Jews. As I will note below, Castro's account of the process of cultural crystallization and the emergence of Spanish [291] ethnicity accords well with recent sociological explications of these processes, even though he failed to understand that cultural processes are controlled to a very great extent by social structure.

Unacceptable as historical method, however, are his continual reiterations of the singularity of the Spanish situation: "the essential uniqueness of the phenomenon," "uniquely Spanish circumstances." Such expressions follow from his assertion that all peoples are unique and that, therefore, historical parallels are always inaccurate. On this basis he concludes that the Spanish situation of cultural pluralism was "without analogy . . . in Orient or Occident."⁽³⁰⁾ Such statements have the result either of discouraging comparative study or of excusing the lack of it, and this posture is defensible only if one deals with content and not structure, or with traits and not relationships or patterns among traits. Not only is there a large literature regarding culture contact and acculturation, but there are instances of Muslim-Christian contact, notably that of the Turks and Greeks in Asia, which bring to light phenomena of direct comparability. But Castro specifically discourages looking into such situations, since such data as might be unearthed would have only "folkloric" value: "For my purpose it makes no difference that such practices [Islam-derived customs present in Spanish culture] are also found in other countries likewise touched by Oriental civilization . . . since I am not interested in folklore but merely in making evident the effects of nine hundred years of Christian-Islamic interaction on the modes of life of the Hispanic peoples."⁽³¹⁾ The stress on uniqueness, linked to the derogation of comparative method in analyzing the processes of cultural change in medieval Spain, has been a dead-weight on medieval historiography. As the sociologist Pierre van den Berghe notes, uniqueness and universality are really two sides of the same coin: "Indeed, at the limit, even the universe is unique, but uniqueness is the product of a large number of repeated, normative, and predictable elements."⁽³²⁾ In his ardor to combat the myth of an eternal Spain, Castro, by eschewing the general literature of cultural action, denied his arguments an important weapon of defense.

Both Castro's theory of history and his methodology hinge upon factors which he understands to have a "historifiable" dimension. Throughout his work he defines and redefines "historifiable," a necessary procedure since he does not give the term objective parameters. In one of the clearest passages, he describes "historifiable existence" as that which is a "creator of values."⁽³³⁾ That is, "historifiable" refers to all those processes [292] whereby value systems are created. This is the concept at its most intelligible level, and the analysis of the process of value creation in medieval Castile is the most significant aspect of Castro's work. But as nuances are added to this straightforward meaning, the concept loses explanatory power. "That which is historifiable will depend . . . on how social groups ceaselessly conceive, *with their gaze turned toward the future*, the ways of life in which they exist, that is to say, on how they use their biological nature, which in itself is of no interest to history."⁽³⁴⁾ Earlier in the same discussion, he states that the modes of social organization which permitted the formation of Spanish culture "were both *desired* and projected ... a will toward *self-expression* in the form of a *valuable* culture."⁽³⁵⁾ In sum, Castro's concept of historifiable includes four qualities: (1) an element of consciousness, of a group's awareness of constituting a particular kind of society; (2) a teleological element, the notion a group has of becoming something in the future; (3) a valuative element -- collective awareness of having accomplished something great or of enduring value; and (4) the ability to mold these first three elements into some form of artistic expression, which in turn becomes the moving force of society.

It is the element of consciousness that causes the most problems for social scientists. Castro constantly stresses that those values which matter most are those which are consciously realized: "collective awareness capable of being elevated to the national level," "awareness of forming part of a [specific] human community," "to appear now as a Spaniard ... is the result of an aim," "the large majority of [the Spanish] people *willed* to have done with the Jews and the Moors."⁽³⁶⁾ Such citations could be multiplied, but these suffice to illustrate two points: first, Castro conceived the basic "historifiable" process as the ongoing progress of a people toward collective self-awareness; second, his emphasis on conscious action constitutes an excessively limited view of culture and, methodologically, a rationale for minimizing the significance of the unconscious level of cultural change, which is the preponderant one.⁽³⁷⁾

The dimensions of collective self-awareness are further elaborated in Castro's conceptualization of culture, which he factors into two distinct constructs: the ".dwelling place" (*morada vital*) or "living structure" (*vividura*) of a people. The *morada vital* encompasses everything contributing to a feeling of selfness (*ipseidad*), including cultural artifacts, language, customs, values, and so forth; it more or less implies the standard anthropological definition of "culture." *Vividura* is the actual process [293] of feeling oneself part of a given culture, or *morada vital*: in other words, experience. *Vividura* represents the conscious level of the largely unconscious processes contributing to the formation of culture.⁽³⁸⁾ Within this broad framework, Castro offers only one mechanism for cultural diffusion and that is simple contact, *convivencia* ("dwelling together").

The development of the Spanish *morada vital* is the process that I have characterized as cultural crystallization, encompassing the entire process of culture formation from the moment of initial Christian-Muslim contact, through an extended period during which a new culture was blocked out, to the final stage of crystallization proper, when cultural boundaries were firmly established and the system as a whole became more rigid (eleventh century).⁽³⁹⁾ The crux of this process is that the recipient culture, in this case the Christian, must in some way adapt to the new situation (caused by the invasion) in such a way as to bring the structure of society and culture into accord with a new reality. It can seek new meaning in the values of the dominant culture or, if it finds these incongruent or incompatible, can create new meanings.⁽⁴⁰⁾ The first choice points to cultural borrowing, the second to reactive adaptation. In either instance, and here Castro is completely correct, the motive force for cultural change in Christian Spain was the Islamic presence.

The inevitability of adaptation occupies a properly central place in Castro's view: "The Islamic element interposed in the eighth century into Romano-Visigothic Hispania became a theme of vital moment to those who were not Muslims and were forced to adjust to those new circumstances. Thenceforward their existence would be woven from the present demands created by strange men and creeds as well as the exigencies of their own traditional habits."⁽⁴¹⁾ Insecurity, which Castro sees as the most characteristic element of the Castilian world view, was initially engendered in reaction to the cultural and political superiority of Islamic civilization and was subsequently fed by ambivalent relationships with Jewish and Muslim minorities, hated but indispensable.⁽⁴²⁾ Hostility among the three groups provided the stimulus for reactive adaptation. Castro makes it an underlying supposition that the only way for a medieval Christian, Muslim, or Jew living

in Spain to feel that he was being himself was through opposing the other two ethnic groups.⁽⁴³⁾ From this flows a whole series of reactive adaptations: Christian exclusiveness in response to Jewish hermeticism; the accentuation of religion in general, in response to the theocratic nature of Semitic culture; and the antipathy of Christians [294] to manual labor in reaction to the perceived industriousness of Jews and Muslims. What Castro's notion of insecurity suggests is a kind of paring down of the repertory of norms, as values associated with Muslims or Jews came to be discarded as unworthy, a not untypical reaction by ingroups to outgroup success.⁽⁴⁴⁾

In Castro's view, Castilian culture had crystallized by the twelfth century, by which time the boundaries of Castilian ethnicity were settled and had become relatively impervious to additional Islamic influences. The influence of French culture, borne by Cluniac monks, was a sign that Islamic influences were waning, although Castro also indicates that the crystallization of Castilian culture had the further effect of rendering it more or less impervious to European currents as well.⁽⁴⁵⁾ The growth of intolerance is a further indication of the increasing rigidity of Castilian culture once its constitutive elements had been integrated. Tolerance, in this sense, was a function of the fluidity which inheres in a situation of culture creation under the impact of a more powerful alien group.

Castro's explanation of culture formation, terminological inconsistencies aside, is quite in line with the thrust of modern anthropological and sociological literature of culture contact and acculturation. Where his view is deficient, it is because he failed to see the social structure underlying cultural exchanges, the stage on which those exchanges took place. As van den Berghe notes:

"The analysis of ethnic relations must not be focused exclusively or even primarily at the cultural level; ethnic relations cannot satisfactorily be accounted for simply in terms of cultural differences, culture contact, and acculturation between groups. It is important to distinguish analytically the structural elements of ethnic relations from the cultural ones. The dynamics of group membership, solidarity, and conflict, and the network of structured relationships both within and between groups, are at least as essential to an understanding of ethnic relations as the cultural dynamics of group contact. People are not only 'carriers of culture'; they are also members of structured groups. Insofar as systems of ethnic relations are largely determined by structural asymmetries in wealth, prestige, and power between groups, an inventory of cultural differences gives one a very incomplete picture of group relations. Cultural differences are frequently symptoms rather than determinants of intergroup behavior, even in systems where the distinguishing criteria of group membership are predominantly cultural."⁽⁴⁶⁾

[295] Acculturation is a two-way process. Contacting groups tend to grow like one another, and elements are exchanged in both directions, although one pole may be stronger than the other. The direction and rate of flow may be determined by power relations, by demographic patterns, by differentials in economic, intellectual, or artistic development, and so forth. The social context of exchange also lends structure to the process. One would expect that whether different mechanisms of cultural diffusion were salient or not would depend on whether that diffusion took place across a political frontier or whether it occurred between a dominant group and an ethnic enclave. If the latter, the size of the

enclave relative to the dominant group would also affect the cultural outcome. In al-Andalus through the tenth century, Romance elements were transmitted to Arabs through the conversion of indigenous peoples. Since the latter were a majority, the sheer weight of numbers meant that, through various non-formal means, considerable borrowing would occur. As conversion proceeded and the society became more homogeneously Muslim, the flow of Romance elements within al-Andalus steadily diminished as the processes of Islamization and Arabization were completed. The number and influence of Romance elements within Islamic society must have approximated a bell curve. We know that the culture of Nasrid Granada was wholly Arabophone and exaggeratedly Islamic, with the exception of specific groups, such as the military elite, who provided a market for Christian military and social innovations.

The demographic structure of intergroup relations effectively sets limits on the rate and direction of cultural flow. When Mozarabs were a majority, for example, one can expect those Arabs and Berbers who intersettled with them to have picked up Romance elements through normal daily interactions. When the enclave lost its demographic weight, however, then the dominant group's ability to acculturate minorities through formal, institutionalized means became increasingly apparent. Converts were acculturated through the molding influences of Islamic institutions, as remaining Christian pockets came under increasing pressure to convert, to learn Arabic, to conform, or to emigrate.

In Christian Spain the situation was different, and more complex. Ethnic enclaves were never a majority, except in certain times and places: e.g., Mozarabs in areas of León and post-conquest Toledo, Muslims in post-conquest rural Valencia. Except for the nuclei of Mozarab settlement, therefore, interaction with enclaves came late. Before the [296] mid-eleventh century, there was a great deal of cultural flow across political boundaries, the selective factor being determined by the differential development of Islamic and Christian societies. As the static agrarian society of the north grew and matured, there was a demand created for cultural innovation which at times took the form of cultural borrowing (imitation) and at times reactive adaptation. Such a situation cannot properly be covered under Castro's general rubric of *convivencia*. This latter refers to the later period of stabilized pluralism in places like Toledo, where cultural interchange between Muslims, Jews, and Christians was, in effect, managed by the latter. The early period was characterized by massive adaptation that had to affect the entire structure of Christian society, whether that adaptation was imitative or reactive in nature. The phase of *convivencia* (twelfth and thirteenth centuries) was characterized by extremely selective borrowing -- the translation movement is an adequate symbol. The contours of this movement were nevertheless extremely complex, and the flow was bidirectional, as Christians pressured Muslims and Jews to acculturate. Burns gives some interesting examples of formal pressures placed upon Valencian Muslims in the thirteenth century. The Christians saw the council of elders as a town council and forced its transformation accordingly. They also reintroduced the *muhtasib*, an office that had fallen into desuetude in late Islamic times, in the revived form of the *mustasaf*, with its traditional jurisdiction but armed now with a standard, written code to execute.⁽⁴⁷⁾

All these nuances must be related to specific social (and especially demographic) variables. In Castro's explication, the processes are too telescopic to give an adequate explanation. In

his telling, Jewish and Muslim societies ultimately failed in Spain because the Christians aspired "*to be more*,"⁽⁴⁸⁾ as if will alone and not such factors as power, wealth, numbers, or technology weighed in the victory. Ultimately, he indicates, the central theme of the Spanish middle ages was not the real "Reconquest" but an interior one, whose stage was the collective mind of Castilians, and the struggle among the three "castes" effectively took place *within* the Christian "caste."⁽⁴⁹⁾ This is a true statement only if the discussion be narrowed to the explanation of the emergence of group self-awareness as the key element in culture formation and the emergence of ethnic groups. But clearly many other processes were involved, many below the level of awareness.

Awareness of cultural differentiation as a reflection of the general [297] processes taking place assumed a variety of forms. We have noted Pedro Alfonso's awareness of the deficiencies of Latin scientific education. Arnald of Vilanova, less of a cultural intermediary than Pedro, masked his dependence on Islamic thought under the guise of criticism. Muslims were aware of their history of technological superiority. In a refutation of ibn García's *Risāla* claiming Neo-Muslim superiority, Abu'l-Talyib al-Qarawî wrote: "If you had contended for superiority with the Arabs in respect to erecting waterwheels, bending iron hooks, planting trees in enclosures, pruning overgrown branches, and working at the anvil, we would be satisfied and would acknowledge the justice of your claim."⁽⁵⁰⁾ But intellectuals are able to perceive the general nature of cultural processes and to distill them, while the workers at the anvil might well be less cognizant of the origin of their technical repertory.

Reyna Pastor asks rhetorically, with respect to Castilians of the late eleventh century, whether a people might have a level of saturation beyond which they cannot absorb alien cultural influences.⁽⁵¹⁾ The answer seems to lie in such concepts as social and cultural crystallization, which indicate that societies and cultures are most open to innovation in their formative periods, after suffering structural loss, and when, as a consequence, social and cultural norms are in a state of flux. Crystallization has the result of hardening cultural boundaries, making them less permeable. But the process of cultural change is continuous, and no culture is ever completely impervious to outside influences. Christians continued to borrow from Muslims in the late middle ages; as a result of the conquest of Granada, a whole new wave of Arabisms, many of them technological, entered the Spanish language.

Quantitative measures of cultural impact are difficult to come by and harder still to interpret. If one looks at the lexicon of the thirteenth century, the percentage of Arabisms in Castilian (as tabulated by Neuvonen) is quite low, less than half of one percent of the total vocabulary. Of the total, 14 percent entered the language before 1050, 15 percent between 1050 and 1200, and the majority entered the language in the thirteenth century.⁽⁵²⁾ These figures, of course, reflect Neuvonen's sample, which was literary in nature and encompasses more or less standardized vocabulary. Examination of regional documentation reveals many more Arabisms of a local or specialized nature. More significant is the breakdown of Arabisms by category (Table 6). Over a six-hundred-year period, the borrowing of terms related to social and administrative [298] institutions was preeminent in the process, an indication, in the first two periods, of the modeling of a less highly structured society after a more highly structured one. The figure for the third period is also high, given the fact that many of the other categories (plants and animal names, e.g.)

reflect the translation movement. Also preeminent are agricultural terms. In a recent study of the contemporary agriculture lexicon in Andalusia, Julio Fernández-Sevilla expresses surprise that the number of Arabisms was lower than expected, given the Islamic agricultural heritage of that region.⁽⁵³⁾ Apparent here is the risk in using contemporary philological data as a historical source, for almost certainly there has been a steady loss of Arabisms since the seventeenth century, so that what [299] remain now are mainly the standard Arabisms accepted in the official language. Of the more historically significant survivals, many date to the Morisco, not the medieval, period. For example, *almocafre* (weeding hoe) appears with greater frequency in the Granadan heartland than in western Andalusia, although in Seville it appears to have been introduced by Moriscos displaced from Granada.⁽⁵⁴⁾ More significant than the descriptive terminology are the techniques themselves. Then too, vocabulary of whatever period does not reveal the full impact of culture contact upon language. Most suggestive is Yakov Malkiel's observation that "The oft-quoted circumstance that Arabic did not add a single phoneme to ancient Ibero-Romance, even if true, does not preclude the other, now frequently concealed, fact that the entire acoustic impression of Spanish underwent a revolutionary change through the introduction of polysyllabism (*guadamacil*, *berenjena*); words of comparable length without an analyzable prefix or suffix hardly existed previously in the vernacular."⁽⁵⁵⁾ In the final analysis, the quantity of the impact of Islamic upon Christian culture matters less than the quality. In discussing the diversity of the Islamic world, Maurice Lombard, using another linguistic analogy, referred to regional "Inflections" upon broader cultural styles.⁽⁵⁶⁾ An Arab Islamic culture in al-Andalus, inflected by Romance influences, a Christian zone inflected no less with eastern traits, adaptation on both sides of the cultural frontier in consonance with and reaction to the contact of cultures -- these are the distinguishing features of Spanish culture in the high middle ages.

Notes for Chapter 9

1. Maravall, *El concepto de España en la edad media*, pp. 191-192.
2. Sánchez-Albornoz, "Tradición y derecho visigodos."
3. Bonnassie, *La Catalogne*, I, 71, 307.
4. Bolens, "Méthodes culturelles," pp. 5, 14.
5. Guichard, "Les arabes ont bien envahi l'Espagne," p. 1493.
6. Hilda Grassotti, "Lo mozárabe en el norte cristiano como proyección de la cultura hispano-goda," *Cuadernos de Historia de España*, 33-34 (1961), 336.
7. Martínez Ruíz, "Notas sobre el arado bereber," p. 326.

8. Castro, *The Spaniards*, p. 180.
9. R. Menéndez Pidal, *Orígenes del español*, p. 555.
10. *Ibid.*, p. 143.
11. See Makkî, *Aportaciones orientales*, p. 280, and also section 3, below. Mones, "Hommes de religion," p. 71; Ashtor, *The Jews in Muslim Spain*, p. 234; Pérès, *Poésie andalouse*, p. 52; Ibn Khaldûn, *The Muqaddimah*, III, 17.
12. Federico Corriente, *A Grammatic Sketch of the Spanish Arabic Dialect Bundle* (Madrid: Instituto Hispano-Arabe de Cultura, 1977), pp. 7, 34, 63, 126, 131 n. 223, 147, 148.
13. *Ibid.*, p. 8.
14. On these incidents, see Makkî, *Aportaciones orientales*, pp. 255-258.
15. E. García Gómez, "Una extraordinaria página de Tîfâsî y una hipótesis sobre el inventor del zêjel," in *Etudes d'orientalisme dédiées a . . . Lévi-Provençal*, II, 519; Guichard, *Al-Andalus*, p. 504.
16. Urvoy, "Etude sociologique," pp. 248, 250, 253, 289.
17. On the distinction between formal and non-formal mechanisms of cultural change, see Foster, *Culture and Conquest*, p. 12; Glick and Pi-Sunyer, "Acculturation as an Explanatory Concept in Spanish History," p. 151.
18. On the *ribât* see Castro, *The Spaniards*, p. 473; Glick and Pi-Sunyer, "Acculturation as an Explanatory Concept in Spanish History," p. 152.
19. Mones, "Hommes de religion," p. 68; 'Abd al-Kaîm, *Al-Andalus en el "Mu'jam al-buldân" de Yâqût*, pp. 111, 128; Goitein, *Mediterranean Society*, I: 51-52; Verner, "La ciencia en el Islam y occidente," p. 543; Jacinto Bosch Vilá, *El oriente árabe en el desarrollo de la cultura de la marca superior* (Madrid: Instituto de Estudios Islámicos, 1954), pp. 16-20, 21 n. 2.
20. Makkî, *Aportaciones orientales*, pp. 195, 198, 280; 'Abd al-Karîm, *Al-Andalus en el "Mu'jam al-buldân" de Yâqût*, p. 96; EI², I, 956-957; Mones, "Hommes de religion," pp. 68 n. 1, 71.
21. Ashtor, *The Jews of Moslem Spain*, I, 120.
22. S. M. Stern, "Les vers finaux en espagnol dans les muwassahs hispano-hebraïques," *Al-Andalus*, 13 (1948), 299-346; Dubler, *La 'Materia Médica' de Dioscorides*, I, 52.
23. Destombes, "La diffusion des instruments scientifiques," p. 51.

24. *The 'Disciplina Clericalis' of Petrus Alfonsi*, Eberhard Hermes, ed. (Berkeley: University of California Press, 1977), p. 72.

25. García Ballester, *Historia social de la medicina en España*, I, 35.

26. Giorgio Levi della Vida, "I mozarabi tra occidente e islam," in *L'Occidente el'Islam nell'alto medioevo*, pp. 677-682; Manuel C. Diaz, y Diaz, "La circulation des manuscrits dans la Péninsule Ibérique du VIII^e au XI^e siècle," *Cahiers de Civilisation Médiévale*, 12 (1969), 384.

27. Diaz, "Circulation des manuscrits," pp. 224, 237, 391.

28. On the impact of French settlement, see Chapter 5, section 5, above. On cultural currents, see Bonnassie, *La Catalogne*, I, 326-340; Diaz, "Circulation des manuscrits"; Defourneaux, *Les français en Espagne*; J.M. Lacarra, "A propos de la colonisation franca en Aragón," *Annales du Midi*, 65 (1953), 331-342; Juan Ainaud de Lasarte, "Moissac et les monastères catalans de la fin du Xe au début du XII^e siècle," *ibid.*, 75 (1963), 545-549; Anscari Mundó, "Moissac, Cluny et les mouvements monastiques de l'Est des Pyrénées du Xe au XII^e siècle," *ibid.*, 75 (1963), 551-570; Ch. Higounet, "Un mapa de las relaciones monásticas transpirenaicas en la edad media," *Pirineos*, 7 (1951), 543-552; and Antonio Linage Conde, *Losorígenes del monacato benedictino en la peninsula ibérica*, 3 vols. (León: C.S.I.C., 1973), II, 863-997.

29. Castro, *The Spaniards*, p. 479; Sánchez-Albornoz, "Repoblación del reino asturleonés," p. 431. Christian kingship as a reflection of Islamic political structure is also Maravall's view (*El concepto de España en la edad media*, p. 386).

30. Castro, *The Spaniards*, pp. 233, 377, 105, 281, 243.

31. *Ibid.*, p. 272. On parallelisms in Asia Minor, see Speros Vryonis, Jr., *The Decline of Medieval Hellenism in Asia Minor and the Process of Islamization from the Eleventh through the Fifteenth Century* (Berkeley: University of California Press, 1971), passim and explicitly on p. 460.

32. Pierre L. van den Berghe, *Race and Racism: A Comparative Perspective* (New York: John Wiley, 1967), p. 121.

33. Castro, *The Spaniards*, p. 405.

34. *Ibid.*, p. 114 (emphasis mine).

35. *Loc. cit.* "Valuable" seems a mistranslation for "valued."

36. *Ibid.*, pp. 39, 42, 36, 314 (emphasis Castro's).

37. The central role accorded to collective self-awareness is the major (although not the only) reflection of Wilhelm Dilthey's influence on Castro. Themes of history as self-

knowledge (*Selbstbesinnung*) and experiential awareness (*Erlebnis*) are prominent in Castro's work; see *The Spaniards*, pp. 105–106 n. 6, 155 n. 15. On Dilthey's influence, see José Luis Gómez-Martínez, *Américo Castro y el origen de los españoles: Historia de una polémica* (Madrid: Gredos, 1975), pp. 120–125. Fortunately, Castro was able to contradict Dilthey's assertion that each generation forgets the experiences of its predecessors see Albert A. Sicroff, "Américo Castro and his Critics: Eugenio Asensio," *Hispanic Review*, 40 (1972), 28. Yet Castro also admits the functioning of unconscious processes. In a footnote, he states that collective goals may be striven for consciously or unconsciously (*The Spaniards*, p. 126 n. 21); he admits that certain customs borrowed by Christians from the Muslims by reason of the latter's prestige were an "unconscious imitation (p. 272; also p. 567) ; and he recognizes that the constitutive values of the Spanish Christians, molded during the middle ages, survive today in a "collective unconscious" (p. 366). But such admissions are incidental to the main thrust of his argument.

38. See Araya, *Evolución del pensamiento histórico de Américo Castro*, pp. 62, 63 n. 105. Frequently, though, the two processes seem blurred, is when Castro (*The Spaniards*, p. 123) defines *morada vital* as "the creation by a people of a new awareness of its collective dimension, new with respect to the awareness expressed before by those who preceded it in that geographical space."

39. For the concept of cultural crystallization, see Foster, *Culture and Conquest*, pp. 222–223. Foster limits the term's applicability to the final phase of culture formation, after the blocking-out period.

40. For sociological formulations of the origins of ethnic awareness which are conceptually quite similar to those of Castro, see David Rothstein "Culture Creation and Social Reconstruction: The Socio-Cultural Dynamics of Intergroup Contact," *American Sociological Review*, 37 (1972), 671–678, and L. Singer, "Ethnogenesis and Negro-Americans Today," *Social Research*, 29 (1962), 419–432.

41. Castro, *The Spaniards*, p. 210.

42. *Ibid.*, pp. 165, 204.

43. *Ibid.*, p. 86.

44. Robert A. Levine and Donald T. Campbell, *Ethnocentrism: Theories of Conflict, Ethnic Attitudes, and Group Behavior* (New York: John Wiley, 1972), p. 147: "Groups seeing themselves as unsuccessful in living up to their own ideas will manifest their greatest hostility toward outgroups that are successful in those particular ways."

45. Castro, *The Spaniards*, pp. 426, 523.

46. Pierre L. van den Berghe, *Race and Ethnicity* (New York: Basic Books, 1970), p. 150.

47. Burns, *Islam under the Crusaders*, pp. 386–394 (on town councils), 240 (on the *mustasaf*).

48. Castro, *The Spaniards*, p. 243 (Castro's emphasis).
49. *Ibid.*, pp. 571, 122.
50. Monroe, *The Shu'ûbiyya in al-Andalus*, p. 81.
51. Pastor, *Del islam al cristianismo*, p. 118.
52. Neuvonen, *Los arabismos del español*, p. 305.
53. Fernández-Sevilla, *Formas y estructuras en el léxico agrícola andaluz*, p. 450.
54. *Ibid.*, p. 318.
55. Y. Malkiel, review of R. Lapesa, *Historia de la lengua española*, 2nd ed., *Romance Philology*, 6 (1952), 62.
56. Lombard, *L'Islam*, p. 17.

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The Mediterranean World

[301] Of the many authors who have written on the medieval Mediterranean world as an interacting system of societies and cultures, two have produced works of particular merit for the interweaving of economic and cultural themes. S. D. Goitein's many studies based on the documentation originally contained in the Cairo Geniza have proved of enormous utility in establishing the economic system of the Islamic world of the high middle ages, as well as illuminating many aspects of medieval technology, society, and culture which, although based on material of Jewish provenance, still provide an accurate reflection of a generalized culture shared by the urban middle class throughout the Islamic world. Goitein himself notes the paucity of Spanish economic documents in the Geniza collections, a lack which is surprising in view of the prominent share which Andalusí wares held in Islamic Mediterranean markets. The lack of documentation seems to have reflected the association of Andalusí Jews with the Babylonian synagogue in Cairo, whereas the Geniza documents emanated from the Palestinian congregation.⁽¹⁾ Nevertheless, enough Spanish material intrudes itself to suggest that the patterns described were as typical of Andalusí as of North African society. Of relevance to Spain is *A Mediterranean Society*, of which two volumes (of a projected three) have appeared thus far. The first -- *Economic Foundations* (Berkeley, 1967) -- contains much material relevant to Andalusí participation in the Islamic world economy, as well as to the store of techniques common to all countries of the Islamic Mediterranean. The second volume -- *The Community* (Berkeley, 1971) -- contains information on the position of ethnic minorities in the Islamic world, directly relevant to the Andalusí situation, which was, of course, faithful to norms general throughout Islam. In *Letters of Medieval Jewish Traders* (Princeton, 1973), Goitein provides translations of a number of Andalusí documents, plus numerous passing references to Spanish commercial products which provide a vivid enough picture of the place of al-Andalus in a wider commercial framework. Also important for the general economic and cultural background [302] of the period are Goitein's *Studies in Islamic History and Institutions* (Leiden, 1966).

The works of Maurice Lombard also relate to the place of Spain, particularly Islamic Spain, in the medieval economy. His collected essays, *Espaces et réseaux du haut moyen âge* (Paris-The Hague, 1972), deal with general economic history, but always within an explicit geographical framework wherein the axial role of Spain is clear. Of particular significance is his discussion of the timber trade, wood having been the primary energy source of medieval technology. His more popular book, *L'Islam dans sa première grandeur (VIIIe-XIe siècle)* (Paris, 1971), also highlights al-Andalus as an integral sector of the medieval Islamic world.

The Iberian Middle Ages

The disjunction between Islamic and medieval studies in the Spanish academic tradition has meant that works of a general nature usually survey one culture or the other: there is no survey covering both Christian and Islamic Spain written by an Islamist and those written by medievalists tend to give inadequate coverage to Islamic society.

A number of recent works stress social or cultural continuities spanning the Islamic conquest of 711. Harold Livermore, *The Origins of Spain and Portugal* (London, 1971), views both Visigothic and Islamic political organization as embroiderings of Roman themes. A. Barbero and M. Vigil, *Sobre los orígenes sociales de la reconquista* (Barcelona, 1974), stress the continuity between Cantabro-Basque tribal structure and the emergent societies of the western Christian kingdoms. Ignacio Olagüe, in a book which first appeared in French with the provocative title *Les arabes n'ont jamais envahi l'Espagne* (Paris, 1969), asserted that there was no true invasion but rather a rapid, mass conversion of Hispano-Romans to Islam, a religion in harmony with supposedly dominant theological trends of a unitarian (i.e., adoptionist) nature. A Spanish version appeared later, with the footnotes that were lacking in the original and a new title: *La revolución islámica en occidente* (Barcelona, 1974). See Pierre Guichard's response, "Les arabes ont bien envahi l'Espagne: Les structures sociales de l'Espagne musulmane," *Annales*, 29 (1974), 1483-1513. Although Olagüe's views on conversion and social structure cannot be taken seriously, his comments on historical climatology are interesting and well-informed.

[303] Among surveys by medieval historians are Luis G. de Valdeavellano, *Historia de España: De los orígenes a la baja edad media* (Madrid, 1952; 5th ed., 1973), which extends through the twelfth century only, and his *Curso de historia de las instituciones españolas* (Madrid, 1968; 3rd ed., 1973). Valdeavellano's approach is institutional and political. More sensitive to economic developments is José Angel García de Cortázar, *La época medieval* (Historia de España Alfaguara II) (Madrid, 1973; 2nd ed., 1974). The coverage of al-Andalus by both authors is perfunctory. Also covering both societies is José Antonio Maravall, *El concepto de España en la edad media*, 2nd ed. (Madrid, 1964), a masterful analysis of the changing geographical, political, and cultural meanings of the concept of Spain.

Al-Andalus

Two recent histories of Spanish Arabism make it clear that before the present decade there was virtually no social history of al-Andalus, previous workers in the field having concentrated almost wholly on narrative political history and on various aspects of Islamic culture, particularly literature and philosophy. These studies are James T. Monroe, *Islam and the Arabs in Spanish Scholarship* (Leiden, 1970), and Manuela Manzanares de Cirre, *Arabistas españoles del siglo XIX* (Madrid, 1972).

The standard history of al-Andalus through the fall of the Caliphate is E. Lévi-Provençal, *España musulmana hasta la caída del califato de Córdoba*, trans. E. García Gómez, 2nd ed. (Madrid, 1957) published as volume IV of the *Historia de España* directed by Ramón Menéndez Pidal. Volume V of the same series includes "Instituciones y vida social e intelectual," by Lévi-Provençal -- an updated version of *L'Espagne musulmane au Xème siècle*

(Paris, 1932) – and "Arte califal" by Leopoldo Torres Balbás. Lévi-Provençal's narrative, drawn from Arabic chronicles, is still useful, but he did not fully appreciate the tribal nature of Andalusí society in the eighth and ninth centuries, nor was he able to describe accurately the mechanism of conversion and its rate.

Three shorter works also provide adequate overviews: Henri Terrasse, *Islam d'Espagne: Une rencontre de l'Orient et de l'Occident* (Paris, 1958); Juan Vernet, *Los musulmanes españoles* (Barcelona, 1961); and W. Montgomery Watt, *A History of Islamic Spain* (Edinburgh, 1965). For the post-caliphal period there are a number of studies on individual [304] Party Kingdoms: Andrew Handler, *The Zirids of Granada* (Coral Gables, Florida, 1974); three studies by Hady, Roger Idris, all of which are basic to an understanding of Berber politics in eleventh-century al-Andalus – "Les Aftasides de Badajoz," *Al-Andalus*, 30 (1965), 277–290; "Les Birzâlides de Carmona," *ibid.*, 30 (1965), 49–62; "Les Zîrîdes d'Espagne," *ibid.*, 29 (1964), 39–137. See also Manuel Terrón Albarrán, *El solar de los Aftásidas: Aportación temática del reino moro de Badajoz, siglo XI* (Badajoz, 1971). For the Berber invasions, see J. Beraud-Villars, *Les Touareg au pays du Cid: Les invasions Almoravides en Espagne aux XIe et XIIe siècles* (Paris, 1946) and Roger LeTourneau, *The Almohad Movement in North Africa in the Twelfth and Thirteenth Centuries* (Princeton, 1969). A useful collection of medieval texts, mainly Islamic, is Claudio Sánchez-Albornoz, *La España musulmana*, 3rd ed. (Madrid, 1973).

The entire countenance of Andalusí studies has been altered substantially by the publication of Pierre Guichard's *Al-Andalus: Estructura antropológica de una sociedad islámica en occidente* (Barcelona, 1976). Heretofore no scholar had grasped the tribal nature of Andalusí society, particularly in its first two centuries, as a result of which the social structure was misunderstood and misrepresented. Moreover, in attacking the thesis of cultural continuity between pre- and post-711 Hispanic societies, Guichard is able to demonstrate that Umayyad society in Spain was a normative Islamic one in which indigenous elements were assimilated to dominant Arab-Berber norms and not the reverse.

The new edition of the *Encyclopaedia of Islam*, 4 vols– to date (Leiden, 1960–), contains a wealth of information on all aspects of Andalusí culture and society in biographical and thematic articles by Lévi-Provençal, Ambrosio Huici Miranda, Charles Pellat, Hussain Mones, D. M. Dunlop, Fernando de la Granja, and other specialists.

The cultural geography of al-Andalus is well-represented in the literature because it reflects a genre of medieval Arabic literature, the "Books of Routes and Kingdoms" (*Masâlik wa-mamâlik*). See *La péninsule i'bérique au moyen-âge d'après le Kitâb ar-ra'ud al-mi'târ fî habar al-aktâr d'ibn 'Abd al-Mun'im al-Himyârî*, ed. E. Lévi-Provençal (Leiden, 1938); and al-Saqundî, *Elogio del Islam español*, trans. E. García Gómez (Madrid-Granada, 1934). On geopolitical terminology, see Gamâl 'Abd al-Karîm, *Al-Andalus en el "Mu'yam al-buldân" de Yâqût* (Sevilla, 1972), and Jacinto Bosch Vilá, "Algunas consideraciones sobre el-Tagr en al-Andalus y la división político-administrativo en la España musulmana," [305] in *Etudes d'Orientalisme dédiées a ... Lévi-Provençal*, 2 vols.(Paris, 1962), I, 23–33.

The place of Berber Culture and society in medieval Spain is now receiving its just share of attention. On settlement, see Bosch Vilá, "El elemento humano norteafricano en la historia de la España musulmana," *Cuadernos de la Biblioteca Española de Tetuán*, 2 (1964), 17–

37; Guichard, "Le peuplement de la région de Valencia aux deux premiers siècles de la domination musulmane," *Mélanges de la Casa de Velazquez*, 5 (1969), 103-156; and Jaime Oliver Asín, "En torno a los orígenes de Castilla," *Al-Andalus*, 38 (1973), 319-391. The last two studies are inventive attempts to reconstruct early patterns of Berber settlement (in Valencia and Old Castile, respectively), primarily on the basis of placenames.

In economic history, there are the detailed but unanalytical volumes of S. M. Imamuddin, *The Economic History of Spain (Under the Umayyads)* (Dacca, 1963) and *Some Aspects of the Socio-Economic and Cultural History of Muslim Spain, 711-1492 A.D.* (Leiden, 1965). A sampling of significant economic data is found in E. Ashtor, "Prix et salaires dans l'Espagne musulmane aux Xe et XIe siècles," *Annales*, 20 (1965), 664-679. On markets and their role in the Andalusí economy, see Pedro Chalmeta Gendrón, *El señor del zoco en España* (Madrid, 1973), but note Ashtor's critique in *Cahiers de Civilisation Médiévale*, 19 (1976), 280-283. On the agricultural economy, see Andrew M. Watson, "The Arab Agricultural Revolution and its Diffusion, 711-1100," *Journal of Economic History*, 34 (1974), 8-35, as well as Lucie Bolens' thesis, cited below.

On the development of Andalusí culture, with emphasis on the contributions to it of Arabia, Egypt, and Iraq, there is the seminal work of Mahmûd 'Alî Makkî, *Ensayo sobre las aportaciones orientales en la España musulmana y su influencia en la formación de la cultura hispano-árabe* (Madrid, 1968). Makkî's work bears the same relation to cultural history as Guichard's does to social history, since it illustrates the normal functioning of a regional culture within a wider Islamic sphere. On eastern influences in the Zaragoza region, see Bosch Vilá, *El oriente árabe en el desarrollo de la cultura de la maraña superior* (Madrid, 1954). On Islamic law and its Andalusí interpreters, see Abdel Magid Turki, "La vénération pour Mâlik et la physionomie du Mâlikisme andalou," *Studia Islamica*, 33 (1971), 41-65, and [306] Hussain Mones' important social delineation of Umayyad jurists, "Le rôle des hommes de religion dans l'histoire de l'Espagne musulmane jusqu'à la fin du Califat," *ibid.*, 20 (1964), 47-88. Andalusí Islam is analyzed from the standpoint of the sociology of knowledge in two important articles by Dominique Urvoy: "Une étude sociologique des mouvements religieux dans l'Espagne musulmane de la chute du califat au milieu du XIIIe siècle," *Mélanges de la Casa de Velazquez*, 8 (1972), 223-293, a methodologically innovative reconstruction of the social networks of religious scholars, and "Sur l'évolution de la notion de gihâd dans l'Espagne musulmane," *ibid.*, 9 (1973), 335-371. Henri Pérès, *La poésie andalouse en arabe classique au XIe siècle* (Paris, 1937), presents valuable information across the entire spectrum of cultural interests, particularly literary reflections of Andalusí geography. On Neo-Muslim cultural nationalism, see James T. Monroe, *The Shu'ûbiyya in al-Andalus: The Risâla of Ibn García and Five Refutations* (Berkeley, 1970). On "feudalism," Chalmeta, "Le problème de la féodalité hors de l'Europe chrétienne: Le cas de l'Espagne musulmane," *II Coloquio Hispano-Tunezino* (Madrid, 1972), pp. 91-115. On the Jewish community, Eliyahu Ashtor, *The Jews of Moslem Spain*, 2 vols. (Philadelphia, 1973-79).

Christian Spain

Claudio Sánchez-Albornoz' important monographs on social, institutional, and economic history have been reissued in two collections: *Estudios sobre instituciones medievales españolas* (Mexico, 1965), and *Investigaciones y documentos sobre las instituciones hispanas* (Santiago de Chile, 1970). Articles on social and economic conflict in León and Castile by Reyna Pastor de Togneri have been collected in *Conflictos sociales y estancamiento económico en la España medieval* (Barcelona, 1973). On Catalonia, see Pierre Bonnassie, *La Catalogne au milieu du Xe à la fin du XIe siècle*, 2 vols. (Toulouse, 1975-1976), and Ramon d'Abadal, *Dels visigots als catalans*, 2 vols. (Barcelona, 1970). The basic study of Spanish feudalism is Valdeavellano, "Las instituciones feudales en España," in F. L. Ganshof, *El feudalismo* (Barcelona, 1963), pp. 229-300. On the social and cultural ambience of eleventh-century Castile Ramón Menéndez Pidal's *La España del Cid*, 2 vols., 5th revised ed. (Madrid, 1956) is still evocative.

[307] An innovating attempt to synthesize medieval economic trends is Antonio Ubieto, *Ciclos económicos en la edad media española* (Valencia, 19619). The emergence of markets is the subject of Valdeavellano, *El Mercado en León y Castilla durante la edad media*, 2nd revised ed. (Sevilla, 1975). On the role of Muslim tribute in the eleventh-century economy, see José María Lacarra, "Aspectos económicos de la sumisión de los reinos de Taifas (1010-1102)," in *Homenaje a Jaime Vicens Vives*, vol. I (Barcelona, 1965), pp. 255-279. On land use in high medieval Aragon and Catalonia respectively, see Lynn H. Nelson, "Land Use in Early Aragón: The Organization of a Medieval Society," *Societas*, 3 (1973), 115-127, and José E. Ruiz Domenec, "Una etapa en la ocupación del suelo: La roturación de tierras en la Cataluña vieja durante el siglo XI," *Hispania*, 33 (1973), 481-517. On Castilian field systems, see Jesús García Fernández's basic study, "Campos abiertos y campos cercados en Castilla la Vieja," in *Homenaje a ... Amando Melón y Ruiz de Gordejuela* (Zaragoza, 1966), pp. 117-131, an article originally published in *Annales*, 20 (1965), 692-718. On the relationship between agricultural development and incipient urbanization, Ruiz Domenec, "The Urban Origins of Barcelona: Agricultural Revolution or Commercial Development?" *Speculum*, 52 (1977), 265-286. On pastoral economy, there is the old but still useful study of Julius Klein, *The Mesta: A Study in Spanish Economic History* (Cambridge, Mass., 1920; reprint ed., 1964), and Pastor, "Ganadería y precios: Consideraciones sobre la economía de León y Castilla (siglos XI-XIII)," *Cuadernos de Historia de España*, 35-36 (1962), 37-55. An introduction to the communications infrastructure is Gonzalo Menéndez Pidal, *Los caminos en la historia de España* (Madrid, 1951), pp. 37-79 ("Edad media").

The absence of studies of ecclesiastical domains had formed one of the major lacunae in medieval Spanish economic history. In the last decade, however, numerous domain studies have appeared. Among the most useful are Eufemià Fort i Cogul, *El senyoriu de Santes Creus* (Barcelona, 1972); José Angel García de Cortázar, *El dominio del monasterio de San Millán de la Cogolla (siglos X a XIII)* (Salamanca, 1969); and Salustiano Moreta Velayos, *El monasterio de San Pedro de Cardeña: Historia de un dominio monástico castellano (902-1338)* (Salamanca, 1971). Also interesting, but with less economic content, are Justiniano Rodríguez Fernández, *El monasterio de Ardón* (León, 1964); María del Carmen [308] Pallares and Ermelindo Portela Silva, *El bajo valle del Miño en los siglos XII y XIII* (Santiago de Compostela, 1971); and María del Pilar Yáñez Cifuentes, *El monasterio de Santiago de León* (Barcelona, 1972).

The complex processes of conquest and settlement are delineated in the multiple-author volume, *La reconquista española y la repoblación del país* (Zaragoza, 1951). On the early phases, see Sánchez-Albornoz, "Repoblación del reino asturleonés. Proceso, dinámica y proyecciones," *Cuadernos de Historia de España*, 53-54 (1971), 236-459, and *Despoblación y repoblación del valle del Duero* (Buenos Aires, 1966). His thesis that the Duero Valley had been *totally* depopulated was contested by R. Menéndez Pidal, "Repoblación y tradición de la cuenca del Duero," *Enciclopedia lingüística hispánica*, vol. I (Madrid, 1960), pp. xxix-lvii. For the juridical problem of *presura*, see Ignacio de la Concha, *La presura* (Madrid, 1946). On the demographic structure of early settlement, see María del Carmen Caré, "Migraciones de corto radio," *Cuadernos de Historia de España*, 49-50 (1969), 117-134. J. M. Lacarra studies settlement along the pilgrimage route in "La repoblación de las ciudades en el camino de Santiago: Su trascendencia social, cultural y económica," in Luis Vázquez de Parga, José M. Lacarra, and Juan Uría Ríu, *Las peregrinaciones a Santiago de Compostela*, 3 vols. (Madrid, 1948-1949), I, 465-497.

On later stages of settlement see, on Toledo, Reyna Pastor, "Poblamiento, frontera y estructura agraria en Castilla la Nueva (1085-1230)," *Cuadernos de Historia de España*, 47-48 (1968), 171-220, and *Del Islam al cristianismo: En las fronteras de dos formaciones económico-sociales: Toledo, siglos XI-XIII* (Barcelona, 1975). The latter work is significant inasmuch as the author is the first of Sánchez-Albornoz' school to admit the reality of acculturative processes and to seek a balanced account, although her understanding of Islamic society is inadequate to the task. On Valencia, there is Robert I. Burns' cycle: *The Crusader Kingdom of Valencia: Reconstruction on a Thirteenth-Century Frontier*, 2 vols. (Cambridge, Mass., 1967); *Islam under the Crusaders: Colonial Survival in the Thirteenth-Century Kingdom of Valencia* (Princeton, 1973); and *Medieval Colonialism: Postcrusade Exploitation of Islamic Valencia* (Princeton, 1975). On Murcia, Juan Torres Fontes, *Repartimiento de la huerta y campo de Murcia en el siglo XIII* (Murcia, 1971), and his comparative analysis of Castilian and Aragonese settlement policy, "Jaime I y Alfonso X, dos criterios de repoblación," *VII Congreso de Historia de la Corona [309] de Aragón*, vol. II (Barcelona, 1962), pp. 329-340. On Seville, Julio González, *Repartimiento de Sevilla*, 2 vols. (Madrid, 1951).

The standard history of Jews is Yitzhak Baer, *A History of the Jews in Christian Spain*, 2 vols. (Philadelphia, 1961), which is a reliable guide to the internal development of the Jewish community, the activities of "Court Jews," and royal policy, but which gives few clues as to the daily interactions between Jews and Christians. Valuable in this regard are J. Rodríguez Fernández, *La judería de la ciudad de León* (León, 1969), and A. Carlos Merchan Fernández, *Los judíos de Valladolid* (Valladolid, 1976).

On French settlement and influence, see Marcelin Defourneaux, *Les français en Espagne au XIe et XIIe siècles* (Paris, 1949); Manuel Alvar, "Historia y lingüística: Colonización franca en Aragón," *Festschrift Walther von Wartburg*, vol. I (Tübingen, 1968), pp. 129-150; and J. M. Lacarra, "A propos de la colonisation 'franca' en Navarre et en Aragón," *Annales du Midi*, 65 (1953), 331-342. On monastic interrelationships, see Ch. Higounet, "Un mapa de las relaciones monásticas transpirenaicas en la edad media," *Pirineos*, 7 (1951), 453-552; and, on the influence of Cluny, Antonio Linage Conde, *Los orígenes del monacato benedictino en la península ibérica*, 3 vols. (León, 1973), II, chapter 7.

Urbanism

A survey of the entire peninsula is E. A. Gutkind, *Urban Development in Southern Europe: Spain and Portugal* (New York, 1967). This volume is especially valuable for its reproductions of town maps, but the critical apparatus is incomplete. The structure and functions of Andalusí cities have been studied in numerous articles by Leopoldo Torres Balbás. A synthesis of his work, based almost wholly on previously published articles, was published posthumously under the editorship of Henri Terrasse as *Ciudades hispanomusulmanas*, 2 vols.. (Madrid, no date), but the footnotes have been stripped down from their original form to the extent that references are difficult to follow. Therefore, the original articles are preferred. See, in particular, "Plazas, zocos y tiendas de las ciudades hispanomusulmanas," *Al-Andalus*, 12 (1947), 437-476; "Los contornos de las ciudades hispanomusulmanas," *ibid.*, 15 (1950), 437-486; "Estructura de las ciudades hispanomusulmanas: La medina, los arrabales y los barrios," [310] *ibid.*, 8 (1953), 149-177; and "Extensión y demografía de las ciudades hispano musulmanas," *Studia Islamica*, 3 (1955), 35-59.

A survey of urban history in Christian Spain is J. M. Lacarra, "Panorama de la historia urbana en la península ibérica desde el siglo V al X," in *Estudios de alta edad media española* (Valencia, 1971), pp. 25-65. The basic institutional study is Valdeavellano, *Sobre los burgos y los burgueses de la España medieval* (Madrid, 1960), republished in 1969 under the title *Orígenes de la burguesía en la España medieval*. Among studies of individual Christian towns of particular merit are two by Armando Represa which delineate urban morphology in the context of changing social patterns: "Genesis y evolución urbana de la Zamora medieval," *Hispania*, 32 (1972), 525-545, and "Evolución urbana de León en los siglos XI-XIII," *Archivos Leoneses*, 23 (1969), 243-282. On the latter town also see Sánchez-Albornoz, *Una ciudad de la España cristiana hace mil años: Estampas de la vida en León*, new ed. (Madrid, 1966). On Salamanca, see Manuel González García, *Salamanca: La repoblación y la ciudad en la baja edad media* (Salamanca, 1973).

Technology

The only survey of medieval Spanish techniques is Juan F. Riaño's old but still useful catalog, *The Industrial Arts in Spain* (London, 1879). A very suggestive treatment of Spain's place in a broader, Mediterranean/ North African technological sphere is included, along with valuable information on harnessing techniques, in Richard W. Bulliet, *The Camel and the Wheel* (Cambridge, Mass., 1975).

Various studies cover individual technologies. On glass, there is Alice W. Frothingham, *Spanish Glass* (New York, 1964). On pottery, see Luis M. Llubíá, *Cerámica medieval española*, 2nd ed. (Barcelona, 1973), a manual whose sources are difficult to trace. Still informative is G. J. Osma, *Los maestros alfareros de Manises, Paterna y Valencia*, 2nd ed. (Madrid, 1923). Three articles by Juan Zozaya introduce new methodological perspectives: "Red-Painted and Glazed Pottery in Western Europe: Spain," *Medieval Archaeology*, 13 (1969), 133-136; "El comercio de al-Andalus con el oriente: Nuevos datos," *Boletín de la Asociación Española de Orientalistas*, 5 (1969), 191-200; and "Cerámicas medievales del Museo Provincial de Soria," *Celtiberia*, 21 (1971), 211-222. On paper, see Josep Ma. Madurell i Marimon, *El*

paper a les terres catalanes: Contribució a la seva [311] *historia*, 2 vols. (Barcelona, 1972); and Oriol Valls i Subirà, "Caracteristiques del paper de procedència o escola àrab en els documents del Reial Arxiu de la Corona d'Aragó, *IV Congreso de Historia de la Corona de Aragón*, vol. III (Barcelona, 1962), pp. 319-329.

On hydraulic techniques, see Thomas F. Glick *Irrigation and Society in Medieval Valencia* (Cambridge, Mass., 1970), and the chapter devoted to Spain by Norman Smith, *Man and Water* (New York, 1975), pp. 19-27. On the *noria* there are two comprehensive articles by Julio Caro Baroja: "Norias, azudas, aceñas," *Revista de Dialectología y Tradiciones Populares*, 10 (1954), 29-160, and "Sobre la historia de la noria de tiro," *ibid.*, II (1955), 15-79. A more disjointed account, but one rich in technical details, is Thorkild Schiøler, *Roman and Islamic Water-Lifting Wheels* (Copenhagen, 1973). A study of mills which includes social as well as technological material is Jean Gautier-Dalché, "Moulin à eau, seigneurie, communauté rurale dans le nord de l'Espagne (IXe-XIIe siècles)," in *Etudes de Civilisation Médiévale: Mélanges offerts à Edmond-René Labande* (Poitiers, 1974), pp. 337-349.

Various articles by Miguel Gual Camarena are filled with technological information, including "Para un mapa de la industria textil hispana en la edad media," *Anuario de Estudios Medievales*, 4 (1967), 109-168; "El comercio de telas en el siglo XIII hispano," *Anuario de Historia Económica y Social*, I (1968), 85-106; and "El hierro en el medioevo hispano," in *La minería hispana e ibero-americana*, vol. I (León, 1970), pp. 275-292. On medieval machines, see Caro Baroja, "Sobre maquinarias de tradición antigua y medieval," *Revista de Dialectología y Tradiciones Populares*, 12 (1956), 114-175. On clocks, see José Sánchez Pérez, *La personalidad científica y los relojes de Alfonso X el Sabio* (Murcia, 1955), and Thomas F. Glick, "Medieval Irrigation Clocks," *Technology and Culture*, 10 (1969), 424-428. A model study tracing a technique through philological investigation is Jaime Oliver Asín, "Quercus en la España musulmana," *Al-Andalus*, 24 (1959), 125-181, dealing with cork technologies.

Science

The history of science in medieval Spain was pioneered by José María Millá Vallicrosa, whose shorter monographs are collected in two volumes, *Estudios sobre historia de la ciencia española* (Barcelona, 1949), and *Nuevos estudios sobre historia de la ciencia española* (Barcelona, [312] 1960). Much of his later work was presaged in his important study of the Arabic sources of science at the tenth-century monastery of Ripoll, *Assaig d'història de les idees físiques i matemàtiques a la Catalunya medieval* (Barcelona, 1931). Also, see his studies of Andalusi astronomy and the translation movement, *Estudios sobre Azarquiel* (Madrid-Granada, 1943-1950), and *Las traducciones orientales en los manuscritos de la Biblioteca Catedral de Toledo* (Madrid, 1942). For a critical appreciation of Millás' work, see Thomas F. Glick, "José María Millás Vallicrosa and the Founding of the History of Science in Spain," *Isis*, 68 (1977), 276-283. Millás' interest in the practice of science in al-Andalus is continued by his disciple Juan Vernet. See his study, "La ciencia en el Islam y Occidente," in *L'Occidente e l'Islam nell'alto medioevo*, vol. II (Spoleto, 1965), pp. 537-572, the relevant chapters of his *Historia de la ciencia española* (Madrid, 1975), and his articles on Andalusi scientific figures in the *Dictionary of Scientific Biography*, 14 vols. to date (New York, 1970-). For a comprehensive study of the Andalusi aeronomical school, see Lucie Bolens' perceptive

analysis, *Les méthodes culturelles au moyen-âge d'après les traités d'agronomie andalous: Traditions et techniques* (Geneva, 1974).

There are numerous accounts of the translation movement. An older, but still valuable, study is Charles H. Haskins, "Translators from the Arabic in Spain," in *Studies in the History of Medieval Science*, reprint ed. (New York, 1960), pp. 3-19. Gonzalo Menéndez Pidal wrote two important studies on the mechanisms of transmission: "Cómo trabajaron las escuelas alfonsíes," *Neuva Revista de Filología Hispánica*, 5 (1951), 363-380, and "Los llamados numerales árabes en occidente," *Boletín de la Real Academia de. Historia*, 145 (1959), 179-208. An important monograph on the impact of Arabic astrology on Christian scientific thought, which also contains many insights on the translation process, is Richard Lemay, *Abû Ma'shar and Latin Aristotelianism in the Twelfth Century: The Recovery of Aristotle's Natural Philosophy through Arabic Astrology* (Beirut, 1962). Lemay attempts to sketch the social and cultural dimensions of translation in "Dans l'Espagne du XIIe siècle: Les traductions de l'Arabe au Latin," *Annales*, 18 (1963), 639-665. Some of his more speculative conclusions are analyzed by Sánchez-Albornoz, "Observaciones a unas páginas de Lemay sobre los traductores toledanos," *Cuadernos de Historia de España*, 41-42 (1965), 313-324. Part of this discussion concerns the identity [313] of John of Seville, concerning whom see Lynn Thorndike, "John of Seville," *Speculum*, 34 (1959), 20-38.

The history of one manuscript tradition is the subject of César E. Dubler, *La "Materi'a Médi'ca" de Dioscorides: Transmisión medieval y renacentista*, vol. I (Barcelona, 1953). On the transmission of chemistry, see Robert Steele, "Practical Chemistry in the Twelfth Century," *Isis*, 12 (1929), 10-46. On medicine and pharmacology, see Michael R. McVaugh's introduction to Arnald of Vilanova, *Aphorismi de gradibus* (Granada, 1975), and Luis García Ballester, *Historia social de la medicina en España de los siglos XIII al XVI*, vol. I (Madrid, 1976). The diffusion of scientific instruments is the subject of Marcel Destombes, "La diffusion des instruments scientifiques du haut moyen âge au XVe siècle," *Cahiers d'Histoire Mondiale*, 10 (1966-1967), 31-51.

Philology and Linguistics

On the development of the peninsular Romance languages there is the classic study by Ramón Menéndez Pidal, *Orígenes del español*, 2nd ed. (Madrid, 1929). Kurt Baldinger, *La formación de los dominios lingüísticos en la península ibérica*, 2nd ed. (Madrid, 1972), surveys the recent research. The structure of Andalusí Arabic is studied by Federico Corriente, *A Grammatic Sketch of the Spanish Arabic Dialect Bundle* (Madrid, 1977). R. Dozy, *Supplément aux dictionnaires arabes*, 2nd ed. (Leliden, 1927), is not only a lexicon of Andalusí Arabic but also contains many useful historical references. On the impact of Arabic on Castilian, see Eero K. Neuvonen, *Los arabismos del español en el siglo XIII* (Helsinki, 1941). The *Atlas lingüístico y etnográfico de Andalucía*, Manuel Alvar, ed., 5 vols. to date (Granada, 1961-) contains a wealth of information pertaining to Arabic usages in Andalusia.

There are also useful studies of the vocabulary of different technologies. On agriculture, see Julio Fernández-Sevilla, *Formas y estructuras en el léxico agrícola andaluz* (Madrid, 1975). On textiles, see Jesusa Alfau de Solalinde, *Nomenclatura de los tejidos españoles del siglo XIII*

(Madrid, 1969), and Gerald J. MacDonald, "Spanish Textile and Clothing Nomenclature in -án, -í, and -ín," *Hispanic Review*, 44 (1976), 57-78.

There are numerous studies of historically significant place-names. Among the most useful are Miguel Asín Palacios, *Contribución a la [314] toponimia árabe de España*, 2nd ed. (Madrid, 1944); Arnald Steiger, *Toponimia árabe de Murcia* (Murcia, 1958); Juan Vernet, "Toponimia arábica," in *Enciclopedia Lingüística Hispánica*, vol. I (Madrid, 1960), pp. 561-578; and Francisco Marsá, "Toponimia de roconquista," *ibid.*, pp. 615-646. Hermann Lautensach, *Maurische Züge im geographischen Bild der Iberischen Halbinsel* (Bonn, 1960), is a study of the geographical distribution of Arabic place-names.

The Polemic of Spanish History

Américo Castro's great work, which first appeared under the title *España en su historia (Cristianos, moros y judíos)* (Buenos Aires, 1948), subsequently was reelaborated in successive editions in Spanish and English, each one of which reflected further elaborations of the theme. The next stage was represented by *La realidad histórica de España* (Mexico City, 1954), which included a number of new and rewritten chapters and appeared in English as *The Structure of Spanish History* (Princeton, 1954). Reviews of the 1954 editions were collected under the title *La realidad histórica de España: Juicios y comentarios* (Mexico City, 1957). *Realidad* reappeared in a much revised version, the *edición renovada* of 1962, on which was based the final elaboration which appeared in English as *The Spaniards* (Berkeley, 1971). Among the critical commentaries on Castro's work are Guillermo Araya, *Evolución del pensamiento histórico de Américo Castro* (Madrid, 1969) and José Luis Gómez-Martínez, *Américo Castro y el origen de los españoles: Historia de una polémica* (Madrid, 1975).

Although the brunt of Castro's argument fell in an area which has been a major topic of anthropological discussion for fifty years -- acculturation -- he spawned a generation of intellectual historians who were illiterate in the social sciences and as a result have been unable over the past twenty-five years to advance the discussion much past Castro's original insight. See for example the volume of *Collected Studies in Honour of Americo Castro's 80th Year* (Oxford, 1965), where none of the authors seems able to deal with cross-cultural problems at a conceptual level. On the relevance of acculturation studies, see Thomas F. Glick and Oriol Pi-Sunyer, "Acculturation as an Explanatory Concept in Spanish History," *Comparative Studies in Society and History*, II (1969), 136-154. The major research breakthroughs in this period have originated with [315] Arabists who were knowledgeable in Romance material -- for example, S. M. Stern's work on poetry; J. M. Millás Vallicrosa in the history of science; P. Chalmeta on economic institutions.

Sánchez-Albornoz's reply to Castro was *España: Un enigma histórico*, 2 vols. (Buenos Aires, 1956). It is this work, permeated with his notions of "temperamental inheritance," that I have found fault with in the present book. His institutional studies, by contrast, are relatively free from the same kind of bias, at least overtly. Yet, Sánchez-Albornoz's approach to Arabic documentation is so bizarre that it must cast doubt on his interpretations of source material. Pedro Chalmeta has rightly noted that his hypercritical method of analyzing Arabic texts is inappropriate inasmuch as he relies upon translations.⁽²⁾ For examples, see the sections devoted to Arabic historiography in *Investigaciones sobre*

historiografía hispana medieval (Siglos VIII al XII) (Buenos Aires, 1967). But the problem lies not only with his method of textual analysis but with questionable assumptions regarding the nature of Arabic sources themselves. He asserts that, for example, the early sources concerning the Islamic invasion were written by non-Hispanized Arabs who were prone to accept fables as true, while the later chronicles were infused with realism and reason because they were written by "Islamic historians, either of Spanish origin or already saturated with Hispanism."⁽³⁾ I cannot accept a genetic criterion for historiographical probity.

A relatively objective essay on Romance elements in Andalusí culture and Christian borrowing of Islamic elements, *El islam de España y el occidente* (Madrid, 1974), was originally presented by Sánchez-Albornoz at the Spoleto seminar on the high middle ages in 1964 (*L'Occidente e l'Islam nell'alto medioevo*, Spoleto, 1965, pp. 149-308). In the discussion of this presentation, S. M. Stern took strong exception, not to Sánchez-Albornoz's data, but to the conclusions drawn from them. Stern questioned the logic of taking individual traits as representative of a "Spanish genetic heritage," recalling that Islamic civilization in Iran was likewise inflected with elements of a local culture. To this, Sánchez-Albornoz replied that Stern had erred in neglecting "as unworthy of a historian the study of the projection of the idiosyncratic heredity of each historical community within the national line."⁽⁴⁾ Sánchez-Albornoz's latest polemical volume, *El drama de la formación de España y los españoles: Otra nueva aventura polémica* (Barcelona, 1973), seems to have been stimulated by the steady erosion of a once unanimous consensus of medieval-ists [316] in his favor, such defections here identified as seductions by Castro's deformed ideas. He notes with alarm the intrusion of Castro's influences in recent works (p. 12), recites (as if to refute Castro one final time) another list of indelibly "Spanish" traits (p. 24), and then concludes that Castro's madness was owing to his "Jewish ancestry" (pp. 98, 104). Sánchez-Albornoz's work is surveyed by José-Luis Martín, "El occidente español en la alta edad media según los trabajos de Sánchez-Albornoz," *Anuario de Estudios Medievales*, 4 (1967), 599-611.

Notes for the Bibliography

1. Goitein, *Mediterranean Society*, I, 21.
2. Pedro Chalmeta, "Historiografía medieval hispana: Arabica," *Al-Andalus*, 3-7 (1972), 354.
3. Sánchez-Albornoz, *España: Un enigma histórico*, I, 221.
4. The exchange, in French, is reproduced in *L'Occidente e l'Islam nell'alto medioevo*, pp. 379-385.

Figures

Figure 1 : Conversion to Islam in al-Andalus

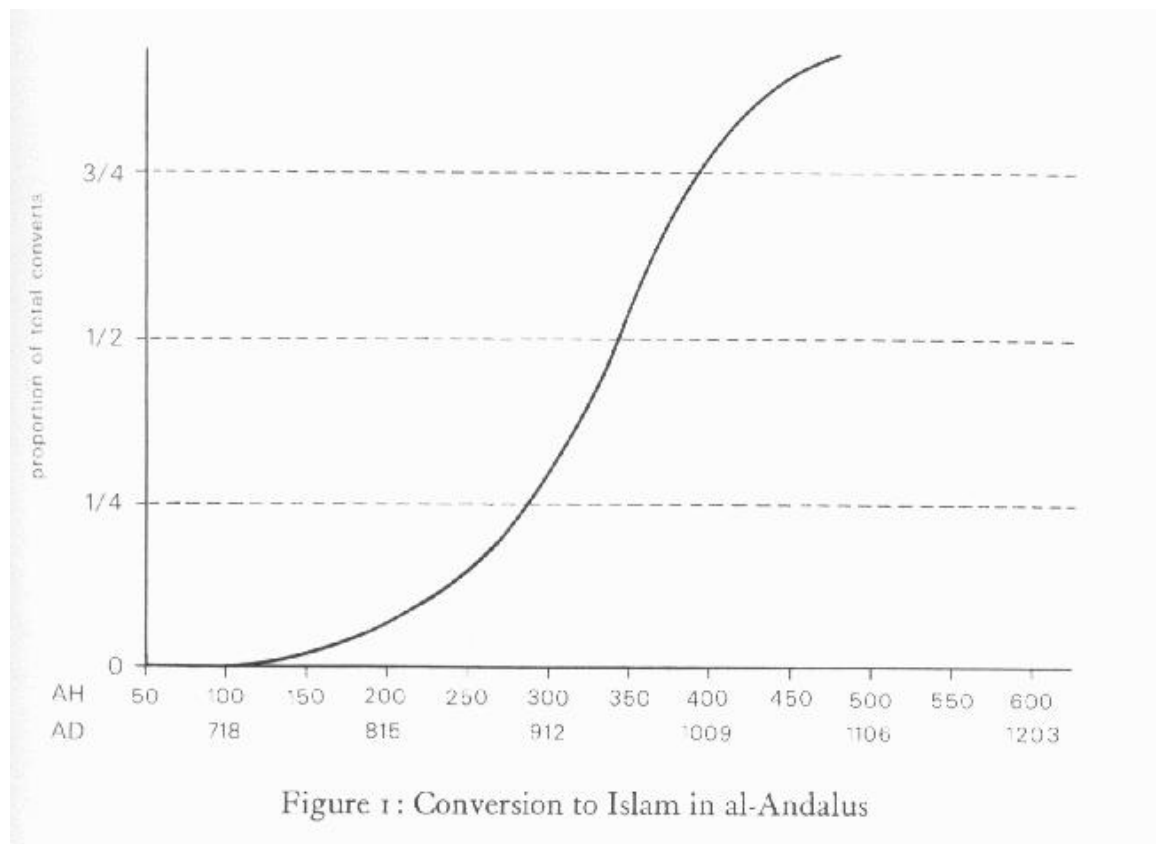


Figure 2 : Typology of Christian and Muslim Enclaves in Medieval Spain

Figure 2
Typology of Christian and Muslim Enclaves in Medieval Spain

		Society	
		Al-Andalus	Christian Spain
Cultural Criteria	Religious Continuity	Christians living under Islamic rule (Arabic, <i>musta'rib</i> ; Castilian, <i>mozarab</i>).	Muslims living under Christian rule (Castilian, <i>mudéjar</i> ; Arabic, <i>mudajjan</i>).
	Religious Shift	Christians converted to Islam (Arabic, <i>muwallad</i> ; Castilian, <i>muladí</i>).	Muslims converted to Christianity (Castilian, <i>converso</i> , <i>tornadizo</i>).
	Linguistic Shift	Christians speaking Arabic (Arabic, <i>musta'rib</i>).	Christians speaking Arabic (Castilian, <i>algarabiado</i>). Muslims speaking Spanish (Castilian, <i>ladino</i>).

Figure 3 : Components of an Animal-drawn *Noria*

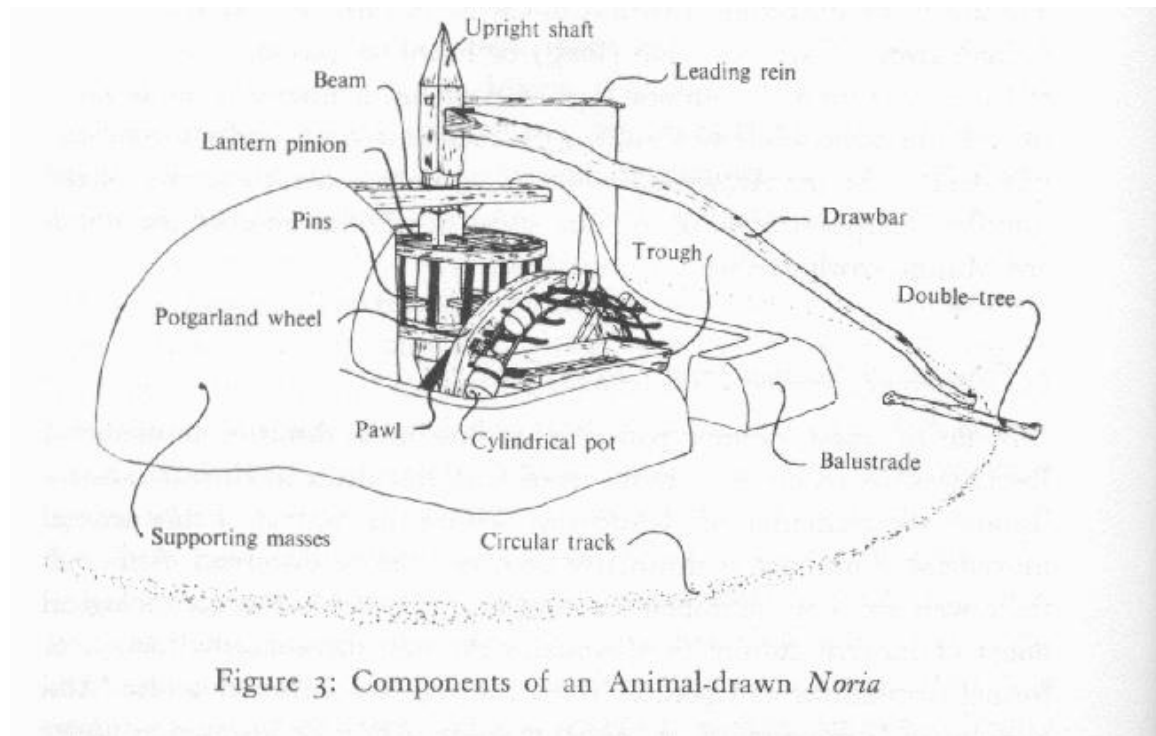


Figure 4 : Maslama and his School

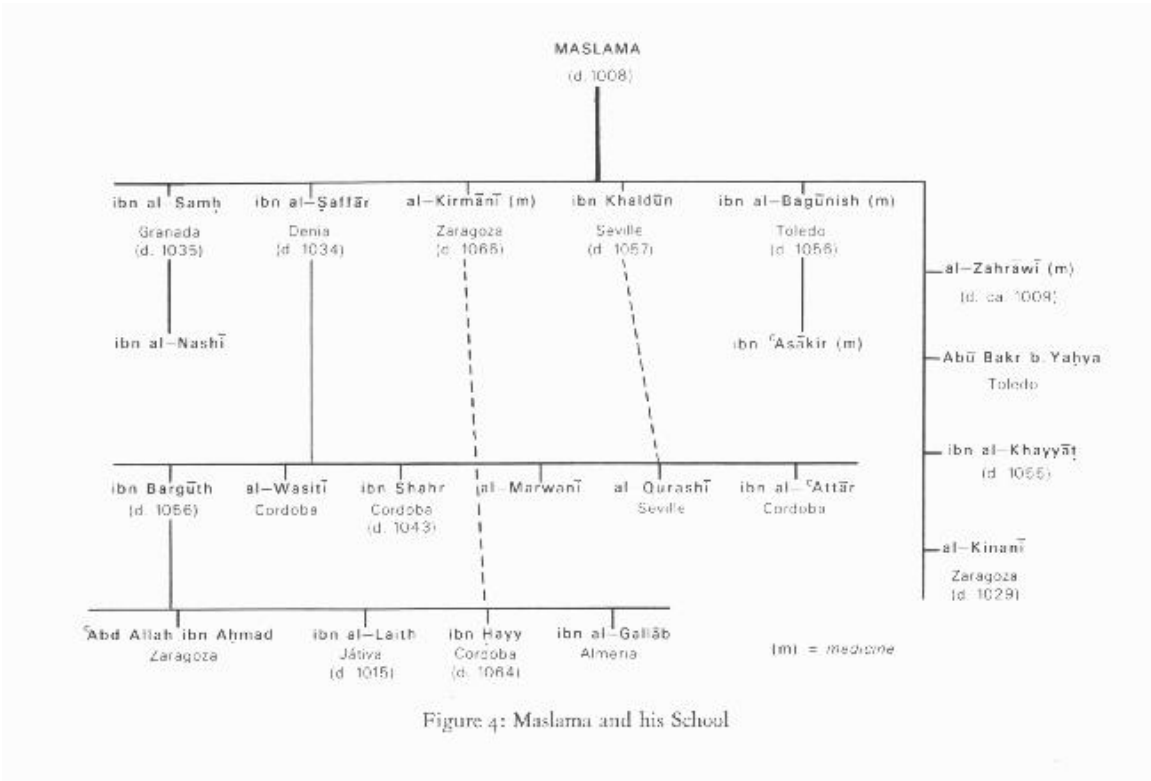


Figure 5 :The Andalusí Agronomical School

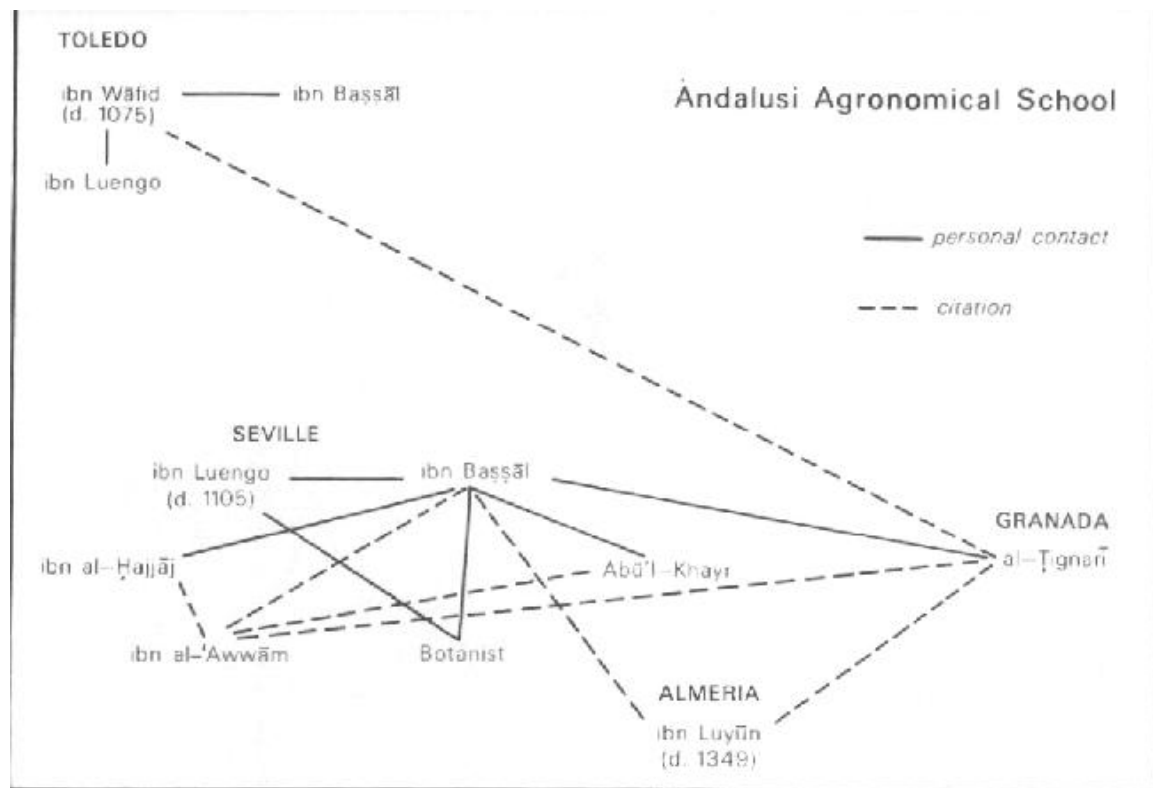
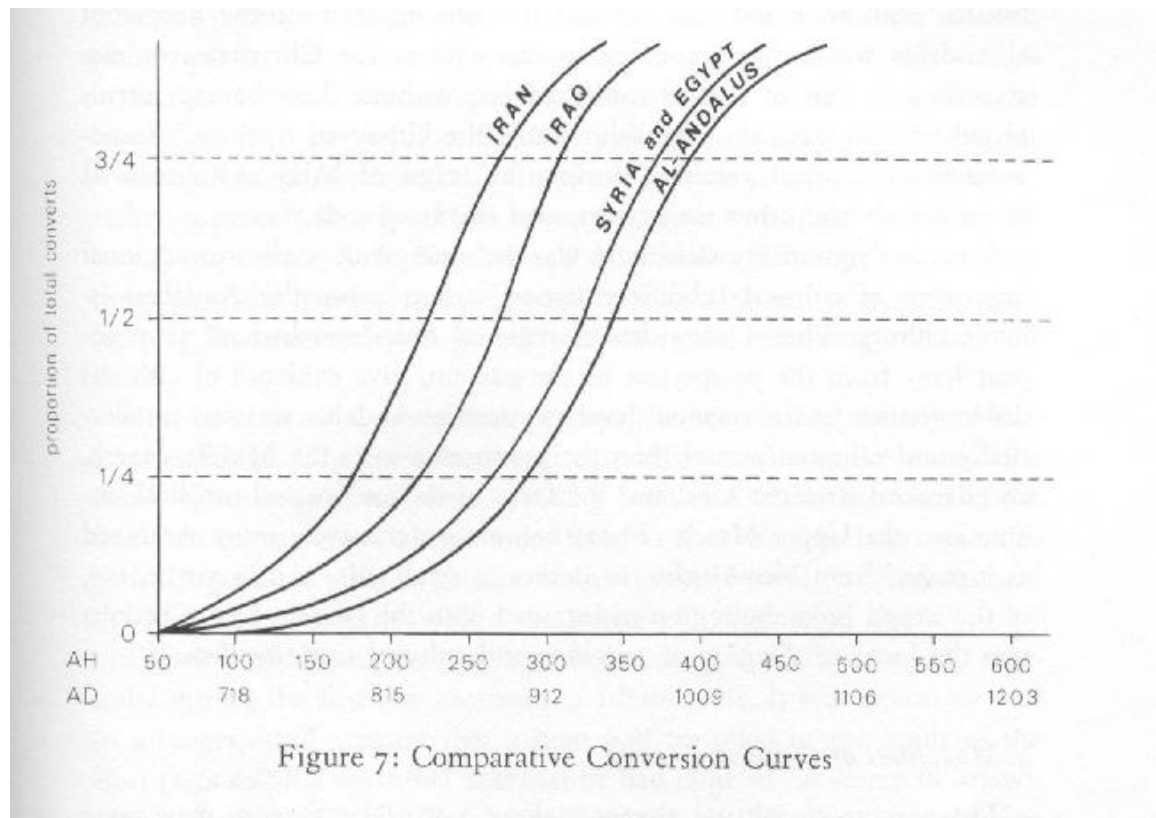


Figure 5: The Andalusí Agronomical School

Figure 6 : Ratio of Christian and Muslim Scientists

Unavailable.

Figure 7 : Comparative Conversion Curve



Tables:

Table 1 : Edible Crops Introduced by the Arabs

Table 1

Edible Crops Introduced by the Arabs

Spanish Derivation	Meaning	Arabic Form
aceituna	olive	al-zaitûna
albaricoque	apricot	al-barqûq
alcachofa	artichoke	al-kharshuf
algarrobo	carob	al-kharrûba
arroz	rice	al-ruz
azafran	saffron	al-za'farân
azúcar	sugar	al-sukkar
azufaifa	jujube	al-zufayzaf
berenjena	egg plant	bâdhinjâna
chirivia	parsnip	jiriwiyya
limón	lemon	laimûn
naranja	orange	nâranjâ
toronia	grapefruit	turunja
zanahoria	carrot	isfannâriya

Table 2 : Andalusí Terms for Wheat

Table 2

Andalusí Terms for Wheat

A. ARABIC TERMS WHICH PASSED INTO ROMANCE

Arabic Form	Meaniing	Romance Derivative
daqsa	sorghum	adaza
darmaqa	hard wheat	adárgama
dhura	sorghum	aldora
duqûq	high-grade wheat flour	adutaque
madhûn	lower grade wheat	almodón
samîd	white flour	acemite

B. ARABIC TERMS DERIVED FROM ROMANCE FORMS

Romance Form	Meaning	Arabic Derivative
álaga	spelt	araka
centeno	rye	shantiyya
rubión	red wheat	ruyun

Table 3 : Artisan Nisbas of Andalusī Sufis (Thirteenth Century)

Table 3				
Artisan Nisbas of Andalusī Sufis (Thirteenth Century)				
Nisba	Meaning	Residence	Page reference★	Comments
fakhkhâr	potter	Málaga	129	Cf. Goitein, <i>Mediterranean Society</i> , I: 73. Goitein, 1: 421.
haddâd	blacksmith	Seville	134	
hinnawi	henna siever	Fez	114	
		Ronda	152	
jarrâr	potter	Seville	91	
kahhâl	maker of kohl sticks	Tunis	153	More likely a kohl worker than an oculist; see Goitein, I: 99-100.
kharrâz	cobbler	Seville	124	See Goitein, p. 422.
		Niebla	139	
khayyât	tailor	Seville	91	
naqarat	woodcarver		135	Variant form of <i>niqârat</i> ; see Dozy, <i>Supplement</i> , II: 710b; H. Wehr, <i>Dictionary of Modern Written Arabic</i> , p. 990.
qaddâb	copper worker	-	160	Goitein, <i>Letters</i> , p. 86 n. 7.
qalafât	ship caulker	Málaga	129	Same individual as the <i>fakhkhâr</i> .
qânûni	musician	Ronda	134	More likely a player of the <i>qanun</i> than a lawyer.
qattân	cotton worker	Córdoba	112	See Wehr, <i>Dictionary</i> , p. 779; Dozy, <i>Supplement</i> , II: 378a.
qarrâq	sandal-maker	Seville	126	See Oliver Asín, "Quercus," p. 142 and below, Chapter 7, section 5(g).
qazzâz	silk weaver	Córdoba	137	Goitein, I: 104.
sâ'igh	goldsmith	Ceuta	136	Goitein, I: 108.
shakkâz	tanner	Seville	96	
Priego, Granada	110,159			
warrâq	paper-maker	Jerusalem	158	See Vernet, "Ciencia en Islam," p. 550.

★Source: Ibn 'Arabi, *Sufis of Andalusia*, R. J. Austin, trans. (London: George Allen and Unwin, 1971).

Table 4 : Indicators of Structural Gain or Loss in al-Andalus

Table 4

Indicators of Structural Gain or Loss in al-Andalus

Decrystallization

Crystallization

A. NINTH CENTURY

Christian martyrdoms
Detribalization
Insufficiency of
 garrison institutions
Economic depression
Tribal Infighting

Islamization
Urbanization
Introduction of
 Iraqi institutions
Establishment of legal
 norms
Dandyism
Malikism
Study of Hadîth

B. ELEVENTH CENTURY

Decay of central state
Dandyism
Insecurity caused by
 Christian pressure
Religious heterodoxy

States based on realistic
 ethnic base
Economic regionalization
Practice of science
Recognition of Andalusî
 literary tradition

Table 5 : Medieval Castilian Chemical Technology

Table 5

Medieval Castilian Chemical Terminology

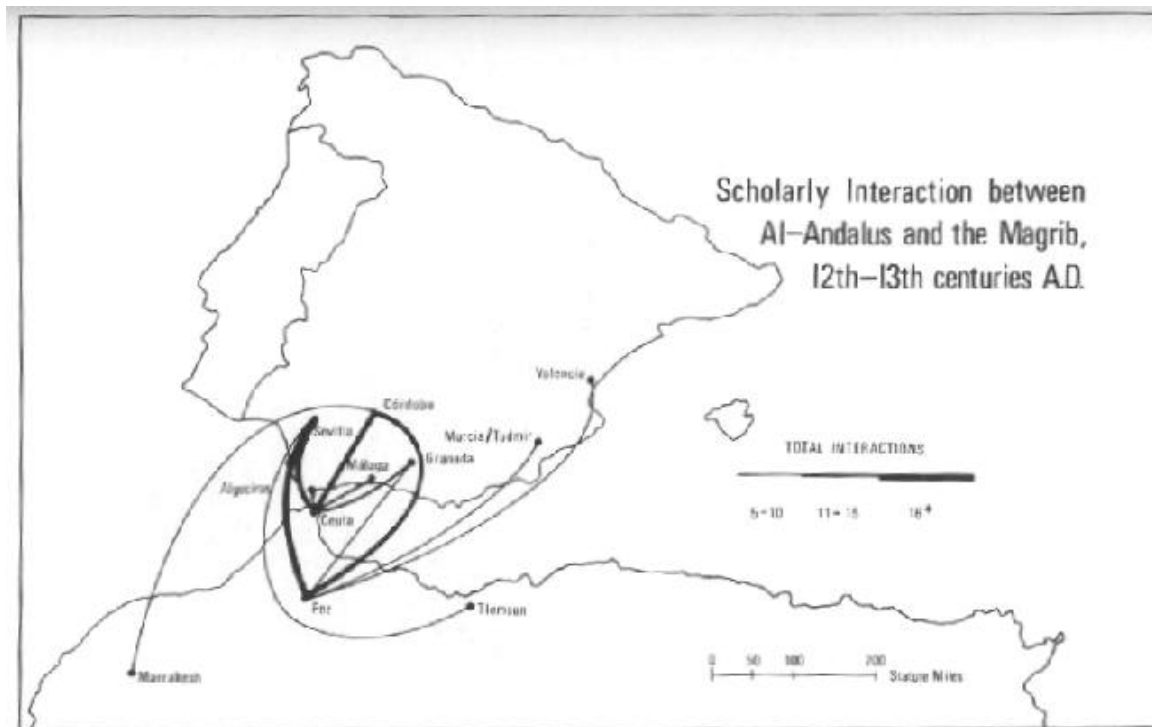
Medieval Castilian	Arabic	Meaning
A. THE SEVEN SPIRITS		
1. alcrebite	al-kibrît	sulphur
2. almocrate, almohatre	al-noshadîr	sal ammoniac
3. atutía	al-tútlyâ'	zinc oxide
4. azarnefe	al-zirnîkh	arsenic
5. azogue variant: sebic	al-zâ'uq zibaq	quicksilver
6. magnesia		magnesia
7. marcasita	marqashîta	marcasite
B. CHEMICAL APPARATUS		
1. alambique	al-inbîq	upper part of distillation vessel
2. alcolla	al-qulla	large glass decanter, cruet
3. alcuza	al-kuza	oil jug
4. alquitara	al-qitâra	distillation vessel
5. aludel	al-'utal	open tube to receive products of sublimation

Table 6 :Arabisms in Castilian Thought through the Thirteenth Century, by Category

Table 6			
Arabisms in Castilian through the Thirteenth Century, by Category			
(percent of total Arabisms)			
	PERIOD		
	711-1050	1050-1200	1200-1300
1. Islam-related	2.6		6.7
2. Institutions	29.0	28.6	13.4
3. Military terms	5.3	28.6	6.2
4. Maritime terms			1.0
5. Weights and measures	13.2	7.2	3.1
6. Agriculture, trade	13.2	9.6	10.1
7. Technology		2.4	6.2
8. Domestic ware	8.0	4.8	3.1
9. Clothing, textiles	21.0	9.6	8.3
10. Metals and related products	2.6		7.2
11. Entertainment			7.7
12. Plant, animal names			13.4
13. Medicine			2.6
14. Geographic terms		2.4	2.1
15. Abstract ideas, scientific terms			2.1
16. Adjectives, particles	5.3	2.4	3.0
17. Verbs			1.6
18. Other		4.8	2.1

Source: Eero K. Neuvonen, *Los arabismos del español en el siglo XIII*, pp. 82-83, 136-137, 258-259.

Map



Map 1: Scholarly Interaction between al-Andalus and the Magrib, 12th-13th centuries A.D.

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Thomas F. Glick is professor of History at Boston University
where he teaches courses on medieval Spain,
medieval science and technology,
and the history of modern science.

He is Director of the Shtetl Economic History Project.